

# Complementary Medicine Research

Practice | Methods | Perspectives

Formerly

**Forschende  
Komplementärmedizin**

Wissenschaft | Praxis | Perspektiven

25 Years  
of Excellence

Volume 25  
Supplement 1,  
April 2018  
online only

**VegMed:**

**«VegMed – Scientific Congress for  
Plant-based Nutrition and Medicine»**

April, 20–22, 2018, Berlin

**ABSTRACTS**

**Editors**

*Christian Kessler;  
Andreas Michalsen,*  
Berlin



**Medicine and  
Plant-based  
Nutrition**

# Complementary Medicine Research

Practice | Methods | Perspectives

Founded by P. Jüni (Bern), D. Melchart (Munich), A. Stacher (Vienna),  
M. Ullmann (Munich)

## Editor-in-Chief

H. Walach, Poznan/Berlin

## Associate Editors

B. Brinkhaus, Berlin  
T. Esch, Witten  
K. Kraft, Rostock  
J. Langhorst, Essen  
D. Melchart, Munich

J. Melzer, Göttingen/Zurich  
A. Michalsen, Berlin  
F. Musial, Tromsø  
R. Saller, Zurich  
M. Walkenhorst, Frick

## Editorial Board

- J. Barth, Zurich  
*Mental Health, Systematic Reviews, Epidemiology*
- S. Baumgartner, Bern  
*Anthroposophic Medicine, Homeopathy*
- M. Bräm, Bern  
*Behavior Medicine, Phytotherapy*
- R. Brenke, Berlin  
*Naturopathic Medicine, Physical Medicine, Lymphology*
- A. Büssing, Herdecke  
*Phytotherapy, Basic Research, Spirituality, Mind-Body Medicine*
- F. Cardini, Verona  
*Acupuncture, Research Strategies, Gynecology*
- H. Cramer, Essen  
*Yoga, Meditation, Mind-Body Medicine*
- M. Dal Cero, Zurich  
*Ethnobotany, Phytotherapy*
- G. Dobos, Essen  
*Mind-Body Medicine, Acupuncture*
- B. Falch, Zurich  
*Phytotherapy, Ethnomedicine, Aromatherapy*
- T. Falkenberg, Huddinge  
*Basic Research, Clinical Research*
- M. Fink, Hannover  
*Acupuncture, Manual Therapies*
- L. Fischer, Bern  
*Neuraltherapy*
- V. Fønnebo, Tromsø  
*Clinical Research, Statistics*
- M. Frass, Vienna  
*Homeopathy, Clinical Research*
- C. Güthlin, Frankfurt/M.  
*Questionnaire Design, Qualitative Research*
- T. Hajto, Budapest  
*Creative Therapies, Phytotherapy*
- J. Hummelsberger, Munich  
*Chinese Medicine*
- D. Irnich, Munich  
*Acupuncture, Clinical Research*
- H. Johannessen, Odense  
*Qualitative Research, Cross-Disciplinary Methodology*
- S. Joos, Tübingen  
*General Medicine, Naturopathic Treatment, Acupuncture*
- C. Kessler, Berlin  
*Ayurveda, Yoga, Meditation, Nutritional Medicine*
- N. Kohls, Coburg  
*Health Promotion and Psychology, Behavior Medicine, Mindfulness, Spirituality*
- M. Kröz, Berlin  
*Anthroposophic Medicine, Clinical Research*
- W. Kubelka, Vienna  
*Phytotherapy*
- R. Lauche, Sydney/Essex  
*Mind-Body Medicine, Methodology, Clinical Research*
- K. Linde, Munich  
*Clinical Research*
- R. Lütke, Essen  
*Biostatistics, Clinical Research, Homeopathy*
- H. MacPherson, York  
*Acupuncture*
- H. Matthes, Berlin  
*Anthroposophic Medicine*
- B. Meier, Wädenswil  
*Phytotherapy*
- S. Moebus, Essen  
*Health Services Research*
- A. Molsberger, Düsseldorf  
*Acupuncture*
- M. Oberbaum, Jerusalem  
*Homeopathy, Clinical Research*
- T. Ostermann, Herdecke  
*Health Services Research*
- F. Pfab, Munich  
*Manual Therapies, Acupuncture*
- K. L. Resch, Bad Elster  
*Osteopathy, Balneology*
- P. Roberti di Sarsina, Bologna  
*Person Centered Medicine, CAM Sociology*
- M. Rostock, Zurich/Hamburg  
*Naturopathic Treatment, Clinical Research*
- Y. Samstag, Heidelberg  
*Cellular Immunology*
- S. Schmidt, Freiburg i.Br.  
*Meditation, Mindfulness, Mind-Body Medicine, Placebo, Neurophysiology*
- H. Schröder, Frankfurt/O.  
*Qualitative Research, Philosophy of Science*
- H. Schwabl, Wetzikon  
*Tibetan Medicine, Basic Research*
- F. Schwerla, Munich  
*Osteopathy*
- R. Stange, Berlin  
*Naturopathic Treatment, Clinical Research*
- D. Steinmann, Hannover  
*Radiotherapy, Oncology*
- W. Stör, Icking  
*Acupuncture, Homeopathy, Naturopathic Treatment*
- C. Terreaux, Villars-sur-Glâne  
*Phytotherapy, Basic Research*
- M. Teut, Berlin  
*Homeopathy, Nutritional Medicine*
- B. Uehleke, Berlin  
*Phytotherapy, Naturopathic Treatment*
- G. Ulrich-Merzenich, Bonn  
*Phytotherapy, Basic Research*
- S. Vollstedt, Bokholt-Hanredder  
*Veterinary Medicine, Immunology, Phytotherapy*
- C. Weckerle, Zurich  
*Chinese Medicine, Basic Research*
- W. Weidenhammer, Munich  
*Clinical Research*
- A. Wiebrecht, Berlin  
*Chinese Medicine, Acupuncture*
- F. Wilhelm de Toledo, Überlingen  
*Dietetics*
- S. N. Willich, Berlin  
*Clinical Research*
- C. Witt, Zurich  
*Research Methodology, Acupuncture, Mind-Body Medicine*
- U. Wolf, Bern  
*Anthroposophic Medicine, Complementary Medicine*

---

## Disclosure Statement

The editors declare that they have no conflict of interest.

## Imprint

---

**ISSN Print Edition:** 2504–2092

**ISSN Online Edition:** 2504–2106

**Journal Homepage:** <http://www.karger.com/cmr>

**Publication Data:** Volume 25, 2018 of 'COMPLEMENTARY MEDICINE RESEARCH' appears with 6 issues.

**Copyright:** © 2018 by S. Karger Verlag für Medizin und Naturwissenschaften GmbH, Freiburg (Germany). All rights reserved. No part of this publication may be translated into other languages, reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, microcopying, or by any information storage and retrieval system, without permission in writing from the publisher.

**Disclaimer:** The statements, opinions and data contained in this publication are solely those of the individual authors and contributors and not of the publisher and the editor(s). The appearance of advertisements in the journal is not a warranty, endorsement, or approval of the products or services advertised or of their effectiveness, quality or safety. The publisher and the editor(s) disclaim responsibility for any injury to persons or property resulting from any ideas, methods, instructions or products referred to in the content or advertisements.

**Subscription Rates:** Subscriptions run for a full calendar year.

Prices are given per year.

**Print:** EUR 192.00 + postage and handling

**Online:** EUR 192.00

**Combined (print+online):** EUR 242.00 + postage and handling

**Postage and handling** (added to print and print+online):

EUR 19.00 (Germany), EUR 26.00 (Rest of World)

**Discount subscription prices:**

Please enquire about reduced rates for members of related societies.

**Back Volumes and Single Issues:** Information on availability and prices of single print issues and print or electronic back volumes can be obtained from Customer Service at [aboservice@karger.com](mailto:aboservice@karger.com)

**For customers in Germany:** Please contact your local bookstore or S. Karger Verlag für Medizin und Naturwissenschaften GmbH Wilhelmstr. 20A, 79098 Freiburg (Germany) Tel. +49 761 45 20 70, Fax +49 761 45 20 714 [aboservice@karger.com](mailto:aboservice@karger.com)

**For customers in all other countries:** Please contact your bookshop or S. Karger AG Allschwilerstr. 10, 4009 Basel (Switzerland) Tel. +41 61 3 06 11 11, Fax +41 61 3 06 12 34 [karger@karger.com](mailto:karger@karger.com)

**Advertising:** Correspondence should be addressed to the publisher. S. Karger Verlag für Medizin und Naturwissenschaften GmbH Attn. Ellen Zimmermann (Head of Marketing) [e.zimmermann@karger.com](mailto:e.zimmermann@karger.com) Price list No. 20 of January 1, 2018 is effective.

**Publisher:** S. Karger Verlag für Medizin und Naturwissenschaften GmbH Wilhelmstr. 20A, 79098 Freiburg (Germany) [www.karger.de](http://www.karger.de), [information@karger.com](mailto:information@karger.com)

**V.i.S.d.P.** (Person responsible according to the German Press Law): Susanne Meister

### Indexing/Abstracting

Listed in bibliographic services, including:

PubMed / MEDLINE / Google Scholar / Scopus / EMCare / WorldCat

e-ISBN 978-3-318-06374-5

---

**KARGER**

Fax +49 761 4 52 07 14  
[Information@Karger.com](mailto:Information@Karger.com)  
[www.karger.com](http://www.karger.com)

© 2018 S. Karger GmbH, Freiburg  
Accessible online at:  
[www.karger.com/cmr](http://www.karger.com/cmr)

**Volume 25,  
Supplement 1,  
April 2018  
online only**

---

# **VegMed: «VegMed – Scientific Congress for Plant-based Nutrition and Medicine»**

April 20–22, 2018, Berlin

## **ABSTRACTS**

---

### **Editors**

*Christian Kessler;*

*Andreas Michalsen, Berlin*



**KARGER**

Basel · Freiburg · Paris · London · New York · Chennai · New Delhi ·  
Bangkok · Beijing · Shanghai · Tokyo · Kuala Lumpur · Singapore · Sydney

**Presentations & Workshops**

Fork and knife: weapons of mass destruction, or instruments of health and healing?	1
Nuts to you! The health effect of regular nuts consumption	1
How to reset your body clock with a plant-based nutrition	1
Milk's software in health and disease	1
Vegane und vegetarische Patientenrechte – Fortbildung für deutsche Krankenhäuser im Hinblick auf vegane Patientenversorgung	2
Paleo diet – the species-appropriate (vegan) alternative?	2
Helping patients adopt healthier diets in the hospital room and beyond	2
Milk intake and risk of mortality and fractures	3
Gemeinschaftsverpflegung im Spannungsfeld veganer Ernährung	3
Defeating diabetes with vegan diet	3
Diet-related greenhouse gas emissions and nutrient intake in the LifeGene study	3
Nudging healthier food choices	4
Die Deckung des Proteinbedarfs mit pflanzlicher Ernährung	4
Cultured meat: quo vadis?	4
Supplementierung kritischer Mikronährstoffe bei pflanzlicher Ernährung aus der Sicht von Ernährungsexperten – eine anonyme Befragung auf dem VegMed Kongress 2018	5
Session zur VeChi-Studie	5
30 Jahre vegane Therapie und Prävention mit Intervallfasten und Bewegung	5
Physicians Association for Nutrition (PAN) establishing a new medical organization: how do we advance evidence-based nutrition?	5
The concept of non-violence in ancient india	5
Vegane Kost als Therapie bei krankheitsbedingter Mangelernährung – Möglichkeiten und Grenzen	6
Medizin und Menschlichkeit (MuM)	6
Edible herbs and their health benefits	6
Plant based pregnancy, lactation and infancy: benefits and risks	6
Dietary guidelines for italian vegetarians: the VegPlate, a mediterranean-based vegetarian food guide (PiattoVeg-Vegplate)	6
What about cheese?	7
Moving towards a plant-based diet	7
The future of nutrition – cultured meat as an ethical alternative?	7
Nudging adolescents towards plant-based food choices	7
Ernährung und Postwachstumsökonomie	8
Tue Gutes und rede darüber – Gesprächsrunde mit erfolgreichen Health-Influencern	8
Slicing into the meaty topic of vegetarianism in india: boon or bane?	8
Die Sojakontroverse – Wunderbohne oder Gefahrenquelle für die Gesundheit?	8
Worldwide vegan – a pragmatic approach	9
Plant-based diets in the prevention and treatment of chronic disease	9
So geht Gesundheit – Frag´ einen Veggie-Arzt	9
Vegan nutrition in sport and health: boom or ancient wisdom? The healthy human as prerequisite to the successful athlete.	9
Vegan unter anderen Umständen – gesunde Schwangerschaft	9
Von jetzt an vegan – so mache ich es richtig	9
Pflanzenbasierte Ernährung und Gesundheit aus wirtschaftlichen Gesichtspunkten	10
Soulfood – Nahrung für die Seele, ein MuM-Workshop	10
Intermittent fasting and plant-based nutrition – a longevity concept?	10

**Research Sessions**

Health status of vegetarian/vegan and omnivorous endurance runners – results from the NURMI-Study (Step 2)	10
Consumer acceptance of behavioral interventions towards plant-based choices in foodservice	11
Plant-based vs. animal-based protein and their impact on blood pressure in older consumers: a systematic review	11
Impact of elimination or reduction of dietary animal proteins on cancer progression and survival – a pilot study	11
Nutritional status of the spanish vegetarian population: Veggunn study	11
Diet-related health risks in germany: a comparison between tobacco products, alcoholic beverages, processed meat and illegal drugs	12
Effect of ayurvedic versus conventional dietary intervention on gut microbiome of IBS patients	12
Ernährungsphysiologische Bewertung von konventionell und ökologisch erzeugten vegetarischen und veganen Fleisch- und Wurсталternativen	12
Inadequate pricing of animal-based foods and its impact on consumer behavior: an approach on internalizing follow-up costs from nitrogen and greenhouse-gases emitted by german agriculture	13
Vegetarian nutrition for mothers and children: guidelines for health care professionals	13
Plant foods, meat, and the risk of diabetes in the KORA FF4 study	13
Medicine from the kitchen: the apple	13
Will goal-setting with a weekly reminder increase uptake of plant-based cooking and/or plant-based dinners on a weekly basis?	14
Cruciferous vegetables and the thyroid gland: friends or foes?	14
Nutrient recommendations for vegans – what should we recommend?	14
Low-Fiber, normocaloric and normoproteic plant-based (vegan) diets: are they feasible?	15
Silent spring – consequences of pesticide application for nature products like honey	15
Effects of a curly kale extract on the antioxidant status and collagen/elastin index of the skin in vivo	15
The effects of green tea beverages on the radical scavenging activity in human skin in vivo	15
Healthy heart with quotidian foods; persian medicine perspective	16
Plant-based eating from the consumer perspective	16
The effectiveness of nudging towards a plant-based diet, a systematic review	16
Evaluating the impact of a nutrition awareness program for expectant mothers upon birth weight of the new born	16
Milk and parkinson's disease: the galactose connection	17
Validation of the efficacy of anti-tuberculosis activity in ananas comosus fruit and identification of potential lead molecule	17
Development of the giessen vegan food pyramid	17
Facilitators and barriers of plant-based diets in traditional meat consuming societies	17
Effectiveness of vegetarian diet in treatment of nonalcoholic fatty liver disease in persian and modern medicine	18
Therapeutic effects of quince in traditional persian medicine	18
Vegetarians and vegans have a lower risk of ischaemic heart disease but a higher risk of total stroke: results from the prospective EPIC-Oxford study	18
Association between a vegan diet and stool pH	18
Plant-based menu for hospitalized patients at nutritional risk, a sensory feasibility study	19
Vegan diet – need for risk communication	19

## Contents

---

Complement Med Res 2018;25(suppl 1):VI

### Late-Breaking Abstracts

Oh Lord, endow my sausage with leafy Oh Lord, let the vitamins from Broccoli go into the sausage – concepts, successes and failures in the promotion of plant-based diets	19
Die Lupine – Anbau, Qualitätssicherung und Vermarktung eines Eiweiss-Shootingstars / Lupine- cultivation, quality assurance and marketing of a protein shooting-star	19
Medications and medical products suitable for plant-based diet consumers	20
Contents	IV
Imprint	II

## Presentations & Workshops

NR. 01

### Fork and knife: weapons of mass destruction, or instruments of health and healing?

Diehl, H.

Lifestyle Medicine Institute (Founder), Loma Linda University, Loma Linda, USA

The accomplishments of modern medicine have been prodigious, especially in the areas of diagnosis and treating episodic and infectious diseases. And yet, these advances in high tech medicine have not altered the advances of our modern killer diseases. Rarely found some 100 years ago, the global incidence rates of chronic diseases, such as cardiovascular disease, diabetes, obesity and certain adult cancers have sharply increased, especially during the last 40 years when profound dietary changes transformed foods into industrialized products and the consumption of animal products became overwhelmingly desirable. With that the diet composition changed where the distribution of macronutrients shifted from a largely unrefined complex carbohydrate diet with sufficient protein and small amounts of fats and sugar to a more affluent diet characterized by a high consumption of fats, refined carbohydrates (both sugars and starches) and where plant protein became largely replaced by animal protein. The result was a major shift in the micro-nutrient content, and also in the lipid, glucose, blood pressure and weight profiles as established risk factors for circulation-related diseases. While smoking and sedentary living contribute to the underlying atherosclerotic and inflammatory processes, the use of fork and knife is emerging as the primary cause in the pathogenesis and in the regression of our largely lifestyle-related chronic disease epidemic. Health is largely a function of how people take responsibility for their own actions. Promoting and restoring health has to do with going beyond the mere management of symptoms through pills and procedures. The current approaches are no longer sustainable. To turn this global epidemic around, we need to deal with the causes of our chronic diseases. And that can best be accomplished through intensive education, motivation and public policies that will contribute to a cultural transformation.

**Disclosure:** none declared

NR. 02

### Nuts to you! The health effect of regular nuts consumption

Sabaté, J.

Center for Nutrition, Healthy Lifestyle and Disease Prevention, Loma Linda University, Loma Linda, USA

We published two landmark studies in the early 1990's that positioned nuts in the public interest as heart-healthy foods: the prospective Adventist Health Study, which for the first time linked nut consumption to lower risk of coronary heart disease; and a dietary intervention trial showing that walnuts lowered blood cholesterol. Since then, epidemiological and clinical research on the health effects of nuts has increased exponentially, confirming the cardioprotective properties of nuts. Cohort studies have consistently shown that nut consumption reduces rates of CVD and stroke. Randomized trials have steadily documented that nut consumption improves the lipid profile, and lowers markers of inflammation and cardiometabolic parameters. Some studies have also provided suggestive evidence for reduced risk of diabetes and some cancers. The protective

effects of nuts are observed for both men and women, across age and race groups and geographic locations, and importantly, different background diets. Vegetarians have the same or greater benefits by nut consumption than non-vegetarians. Nuts are seeds high in unsaturated fats and rich in vitamins, minerals, and bioactive phytochemicals. These nutrients and compounds synergize to positively impact metabolic and vascular physiology pathways. The nutrient-dense matrix of nuts also contains complex carbohydrate, fiber, protein, tocopherols, phytosterols, and polyphenols. Since nuts are high in fat, they are often perceived as promoting weight gain. However, several epidemiological studies in Europe and the USA show an inverse relationship between nut intake and body weight. In several epidemiological studies, nut consumption was associated with longevity. Thus, nuts may be considered natural capsules easily incorporated into any diet to promote health.

**Disclosure:** Joan Sabaté is a non-paid member of the Scientific Advisory Committee of the California Walnut Commission.

NR. 03

### How to reset your body clock with a plant-based nutrition

Kahleova, H.

Physicians Committee for Responsible Medicine, Washington DC, USA

Accumulating evidence suggests that circadian de-synchronization may be an important contributing factor in the development of chronic disease, including obesity, type 2 diabetes, cardiovascular disease and cancer. While our central body clock in the hypothalamus is entrained by the light and dark cycle, the peripheral body clock found in each cell of our body needs to be synchronized with the central clock, mainly through nutritional stimuli. More specifically, this can be achieved through the fasting and feeding cycle, with a plant-based nutrition, and through proper meal frequency and timing. As the insulin action is the most effective in the morning, eating breakfast enables us to use the energy from the meal more efficiently than from the same meal eaten later in the day. While snacks seem to disrupt our body clock, eating 2–3 meals a day, with breakfast being the largest meal, and dinner being the lightest meal of the day, is a great way how to synchronize our body clock. This brings us back to the ancient proverb: Eat breakfast like a king, lunch like a prince, and dinner like a pauper.

**Disclosure:** none declared

NR. 04

### Milk's software in health and disease

Melnik, B.

Fachbereich Dermatologie, Umweltmedizin und Gesundheitstheorie, Universität Osnabrück, Germany

This presentation introduces milk as an epigenetic doping system of mammals, which exerts profound effects in health and disease. Milk operates in analogy to a virus infection and transfers a gene-regulatory software consisting of micro-ribonucleic acids (microRNAs) to the milk consumer. More than 60% of human genes are regulated by microRNAs pointing to the enormous importance of milk-derived microRNAs in gene regulation. The microRNAs of milk represent a highly conserved archaic signaling system of mammals explaining the high sequence homology of human breast milk and cow's milk. The sequence of microRNA-148a,

the dominant microRNA species of milk, is absolutely identical in human and cow's milk. MicroRNA-148a inhibits DNA methyltransferase 1 (DNMT1) expression thereby enhancing the expression of developmental genes such as insulin, insulin-like growth factor 1 (IGF-1) and fat mass and obesity-associated protein (FTO). This epigenetic doping promotes growth and adipogenesis. The MIR148A gene coding microRNA-148a has been identified to promote obesity in humans and lactation performance and milk yield in dairy cows. Milk microRNA-148a contaminates the human food chain because it survives pasteurization and refrigerated storage. This microRNA is further upregulated in high performance dairy cows. It is of critical concern that persistent epigenetic doping via consumption of pasteurized milk may promote the development of diseases of civilization such as obesity, diabetes, neurodegenerative diseases and cancer. Thus, bioactive milk microRNAs should be eliminated from the human food chain.

**Disclosure:** none declared

NR. 05

### **Vegane und vegetarische Patientenrechte – Fortbildung für deutsche Krankenhäuser im Hinblick auf vegane Patientenversorgung**

*Müller-Amenitsch, R.*

Deutscher Repräsentant der International Vegan Rights Association IVRA, Berlin, Germany

Vegetarische und insbesondere vegane Patienten haben im Feld der ärztlichen Behandlung viele Problemfelder, die Rechtsfragen aufwerfen. Hat der Patient Anspruch darauf, ein veganes Essen im Krankenhaus gestellt zu bekommen? Kann er, wenn er kein veganes Essen erhält, seinen Verpflegungstagesatz zurückerstattet bekommen? Begeht der behandelnde Arzt eine Straftat, wenn er seinen veganen Patienten über eine Magensonde mit nicht veganen Produkten versorgt, oder dem vegetarischen Patienten als Träger für einen Allergietest Fleischbrühe injiziert? Haben Patienten in solchen Fällen einen Anspruch auf Schadenersatz und Schmerzensgeld? Wann müssen Krankenkassen Vitamin B12 Tests bezahlen? Haben demente Patienten einen Anspruch auf veganes Essen wenn sie vor der Demenz vegan waren?

Diese und andere Rechtsfragen aus dem veganen Arzt- und Patientenalltag wird Rechtsanwalt Ralf Müller-Amenitsch – Autor von «Vegan im Recht» Deutschland und Österreich – in seinem Vortrag besprechen, danach können themenbezogene Fragen gestellt werden.

Ein Problemlösungsansatz liegt in der Fortbildung für Krankenhäuser. Der Referent berichtet über vielversprechende Entwicklungen.

**Disclosure:** none declared

NR. 06

### **Paleo diet – the species-appropriate (vegan) alternative?**

*Hahn, A.*

Institut für Lebensmittelwissenschaft und Humanernährung der Gottfried Wilhelm Leibniz Universität Hannover, Hannover, Germany

"Paleo diet – the species-appropriate (vegan) alternative?"

The "paleo-diet" (stone-age diet or Paleolithic diet) currently attracts much interest. The protagonists of this diet based on scientific considerations postulate that the metabolism of modern humans is genetically still adapted to the diet of the Paleolithic. Therefore, it is assumed to be the only "optimal" diet for humans. The basic principle of a Paleo diet is to nourish the human organism in accordance with its evolutionary genetic in order to increase mental and physical performance, improve well-being and prevent chronic diseases. A (food) environment, which differs from the Paleolithic pattern, however, is said to affect the health and lead to illnesses, since humans are not adapted to this modern diet. Therefore, all foods are avoided, which are consumed since humans began with agriculture and cattle-breeding about 12,000 years ago. Cereals, dairy products and legumes as well as edible oils and salt, isolated sugars and products

made from them are therefore missing, as are alcoholic beverages (beer, wine). The Paleo diet thus consists of game meat, insects, eggs, fish and seafood, fruit, tuberous plants and leafy vegetables, nuts and seeds together, supplemented by small amounts of honey.

On closer examination, the concept of the paleo diet shows serious weaknesses and can already be refuted by bio-theoretical arguments. In addition, it is difficult, especially in quantitative terms, to define the prehistoric diet. Thus, the epoch of the Paleolithic lasting about 2.3 million years was not characterized by a uniform diet and it also was very variable in several places. Therefore, it remains unclear how the diet should be in detail. Was human food more plant-based and had a higher carbohydrate content? Or vice versa more meat and fish rich and carbohydrate-reduced? Ultimately, both positions can be justified.

So far there are no long-term intervention and observational studies on the Paleo diet. For this reason, modern hunters and gatherers are often used as comparisons. These, with the exception of Inuit, which mainly consume meat and fish, are in good health and have a lower risk of chronic degenerative diseases, despite very different levels of plant and animal food. However, there are many indications that these findings are not only due to the specific hunter-gatherer diet, but also to other lifestyle factors (movement, lack of distress, sleeping behavior).

**Disclosure:** none declared

NR. 07

### **Helping patients adopt healthier diets in the hospital room and beyond**

*Barnard, N.*

Physicians Committee for Responsible Medicine & George Washington University, Washington DC, USA

Maladaptive food habits are the primary cause of the most common and burdensome health conditions, particularly overweight, dyslipidemia, type 2 diabetes, and hypertension. They also play roles in cancer risk, joint disease, many other conditions as well. As a result, a nutritional approach to health should not be viewed as "alternative medicine." Rather, a well-planned nutrition program should be part of every primary care practice and included in every patient's care plan.

Plant-based (i.e., vegan) diets improve body weight, plasma lipids, blood pressure, and diabetes management and, as part of a healthful lifestyle, have been shown to reverse coronary atherosclerosis and improve cancer survival. Overall nutritional quality, as measured with the Alternate Healthy Eating Index, is better on vegan diets than on omnivorous diets. In 2017, the American Medical Association adopted a new set of dietary standards for hospitals, recommending that plant-based (vegan) meals be available for all patients, visitors, and staff, and that processed meats be removed.

Patients can be invited to adopt vegan diets in two steps: First, they are asked to take a week to explore healthful vegan foods. Next, they are asked to adopt a fully vegan diet for a short period, e.g., three weeks, which is ample time for the benefits to begin to be noticed.

Structured group sessions are a cost-effective way to help patients make a diet change together in a supportive environment. Means for implementing these sessions will be discussed. It is also important for caregivers to make diet changes themselves.

Special consideration for patients on medications for diabetes or hypertension and for those on anticoagulants will be discussed.

**Disclosure:** none declared

## Milk intake and risk of mortality and fractures

Michaelsson, K.

Orthopedic Surgery, Uppsala University, Uppsala, Sweden

During the past decade, it has become evident that the increase of oxidative stress with aging is a fundamental pathogenetic mechanism of not only a shortened life-span but also age-related bone loss and sarcopenia, two important determinants contributing to the risk of fracture. Some foods act as pro-oxidants and other as anti-oxidants. There exists a long tradition in many countries to recommend high consumption of milk to prevent fractures in elderly people but the scientific evidence for this view is meager. Milk consumption is the main dietary source of galactose known to induce oxidative stress and shorten life span in animals, but such negative effects in animals can be counteracted by dietary antioxidant intake. Different types of dairy products may result in oxidative stress influence in diverse directions and their effects on fracture risk and longevity in humans may be modified by the intake of foods with antioxidant activity. Oxidative stress levels are also influenced by intakes of fruit and vegetables, recently shown also to be inversely related to risk of hip fracture – the most devastating fracture in older people. Sweden is one of the world's leading nations in dairy consumption per capita and hip fracture incidence. In this presentation, I will discuss novel results regarding dairy product, fruit and vegetable intakes, fracture and mortality based on Swedish cohort analyses and compare these findings with those from other settings and meta-analyses.

**Disclosure:** none declared

## Gemeinschaftsverpflegung im Spannungsfeld veganer Ernährung

Arens-Azevedo, U.

Deutsche Gesellschaft für Ernährung e.V. (Präsidentin), Bonn, Germany

Die Situation der Gemeinschaftsverpflegung (GV) in Deutschland: Die GV hat sich längst in vielen Lebenswelten etabliert. Angefangen bei den Kindertageseinrichtungen, über die Ganztagschulen, Betriebsrestaurants, Mensen, Krankenhäuser und Reha-Kliniken, bis hin zu den Senioreneinrichtungen oder dem Angebot *Essen auf Rädern* gibt es jährlich eine steigende Anzahl von Menschen, die in diesen Settings verpflegt werden. Während Kitas, Schulen, Hochschulen oder Betriebe im Regelfall eine Teilverpflegung anbieten – zumeist Mittagessen und eine Zwischenverpflegung – ist es in Krankenhäusern oder Senioreneinrichtungen eine Vollverpflegung. Die Anzahl der Mittagessen wird derzeit auf 2,49 Mrd. jährlich geschätzt.

Bedeutung der GV für die Primärprävention: Im Rahmen des nationalen Aktionsplans (2008) «IN FORM – Deutschlands Initiative für mehr Bewegung und gesunde Ernährung» wurde die Gemeinschaftsverpflegung als Feld der Primärprävention etabliert. Hintergrund war die Idee: Können die Gäste regelhaft gesundheitsfördernde Mahlzeiten auswählen, so kann dies einen Einfluss auf das Ernährungsverhalten haben und sich langfristig positiv auf die Ernährungssituation des Einzelnen auswirken. Voraussetzung hierfür ist ein entsprechend vollwertiges Angebot über einen längeren Zeitraum, das alle notwendigen Nährstoffe enthält. In Kita und Schule ist das Angebot idealiter verknüpft mit Ernährungsbildung, bei Erwachsenen und älteren Menschen wird das Angebot durch eine entsprechende Ernährungsinformation unterstützt. Auf dieser Basis wurden von der Deutschen Gesellschaft für Ernährung im Rahmen von unterschiedlichen Expertenrunden die DGE-Qualitätsstandards für die Verpflegung in den jeweiligen Lebenswelten entwickelt. Sofern das Angebot den Anforderungen der Standards entspricht, können die Lebenswelten und die Anbieter ein Zertifikat erwerben.

Die Position der DGE zur veganen Ernährung: Bislang sind keine konkreten Zahlen zur Verbreitung veganer Ernährung in der Bevölkerung bekannt. Ihr Anteil wird auf 0,1–1 % geschätzt. 2016 hat die DGE eine

Stellungnahme zur veganen Ernährung veröffentlicht, nicht zuletzt auch deshalb, weil sowohl Konsumenten als auch Lebenswelten entsprechend nachfragten. Zusammenfassend kommt die DGE zu dem Ergebnis, dass bei einer rein pflanzlichen Ernährung eine ausreichende Versorgung nicht bzw. nur schwer möglich ist. Das kritischste Vitamin ist B12, das in jedem Fall supplementiert werden muss. Einige unentbehrliche Aminosäuren, langkettige n-3-Fettsäuren, Riboflavin und Vitamin D sowie Calcium, Eisen, Jod, Zink und Selen können in einem kritischen Bereich liegen. Für vulnerable Gruppen wie Schwangere, Stillende, Säuglinge sowie Kinder und Jugendliche wird diese Ernährungsform nicht empfohlen.

Vegane Angebote in der GV? Immer häufiger ist festzustellen, dass im Rahmen der Gemeinschaftsverpflegung veganes Essen von Seiten der Konsumenten gefordert wird. Die Betriebs- und Hochschulgastronomie kommt diesem Wunsch entgegen, in dem entweder eine entsprechende Menülinie oder tageweise entsprechende Angebote vorgehalten werden. Dies umso mehr, als sich mit solchen Speisen nicht nur gesundheitlich relevante Aspekte darstellen lassen (hoher Anteil an Gemüse und Rohkost, Einsatz von Hülsenfrüchten und Nüssen) sondern auch dem Wunsch nach nachhaltiger, umweltschonender Lebensmittelauswahl Rechnung getragen wird. Auch in Kitas und Schulen wurden bereits von Seiten der Eltern entsprechende Wünsche vorgebracht – hier ist sogar eine Forderung nach veganen Mahlzeiten in Berlin juristisch abschlägig entschieden worden.

**Fazit:** Da es in Kitas und zum Teil auch in Schulen nur eine eingeschränkte Auswahl an Mahlzeiten gibt, sollte DGE-Qualitätsstandard für die Verpflegung umgesetzt werden, da eine Versorgung mit allen Nährstoffen zumindest in der Mittagsmahlzeit erfolgen kann. Aspekte der Nachhaltigkeit spielen auch hier eine große Rolle, da die Anzahl der Fleischmahlzeiten beschränkt wird. Die Gemeinschaftsverpflegung kann dem Wunsch von Erwachsenen nach veganer Kost ohne Probleme nachkommen. In Betrieben oder Hochschulmensen besteht ein großes abwechslungsreiches Angebot an Speisen. Der Wunsch sich umweltverträglich zu verpflegen, kann also ohne Weiteres erfüllt werden und bietet den Verantwortlichen die Chance neue Gerichte auszuprobieren und die Speisenpalette entsprechend zu erweitern. In Kitas und Schulen, aber auch in der Seniorenverpflegung ist eine vegane Ernährung nicht sinnvoll. Einzelne Mahlzeitenangebote können aber sehr wohl diesem Anspruch folgen.

**Disclosure:** none declared

## Defeating diabetes with vegan diet

Davis, B.

Diabetes Wellness Research Project, Canvasback Missions, Majuro, Marshall Islands

In this presentation, Brenda Davis, RD, author and internationally acclaimed speaker, will provide an update on the scientific evidence suggesting that whole food plant-based diets provide powerful treatment options for patients with type 2 diabetes. She will share the outcomes of her work using a plant-based dietary protocol in the Marshall Islands, which has among the highest incidence and death rates from diabetes. Practical suggestions for designing optimal plant-based diets for diabetes reversal will be provided.

**Disclosure:** none declared

## Diet-related greenhouse gas emissions and nutrient intake in the LifeGene study

Bälter, K.

Karolinska Institutet & Mälardalen University, Sweden

Climate change is an urgent global issue and the food sector is a major contributor to greenhouse gas emissions (GHGE). Our collective food choices have significant impact on global GHGE and in order to reduce climate impact from food, the consumption of meat, in particular beef, should be

reduced and the consumption of plant-based foods, such as whole grains, legumes, vegetables and fruit increase. In our ongoing studies we link Life Cycle Assessment (LCA) data, assessment of the environmental impact of foods, to a large study on food habits in order to estimate diet-related GHGE as well as the intake of nutrients associated with vegetables, fruits, meat and dairy products. We found that a self-selected diet low in GHGE provides comparable intake of nutrients associated with vegetables, fruits, meat and dairy, as a diet high in in GHGE. Also, it shows that a diet low in GHGE adhere to dietary guidelines. This opens up for a future win-win situation between a diet low in GHGE and a nutritious diet.

**Disclosure:** none declared

NR. 12

### **Nudging healthier food choices**

*Perez-Cueto, F.J.A.*

Department of Food Science, University of Copenhagen, Copenhagen, Denmark

**Background:** A plant-based diet is both healthy and sustainable. After large information campaigns, most EU citizens know about eating more fruits and vegetables. However, actual consumption remains below recommendations. Knowledge is necessary but not sufficient to generate behavioral change. Epidemiologic data showed that small changes towards a better dietary quality (measured as the Mediterranean Diet Score) are feasible, long lasting and health promoting. Therefore, support for facilitating plant-based choices through small and repetitive changes could contribute to achieving dietary goals.

**Objective:** To summarize lessons from systematic reviews and empirical intervention studies on the effect of nudging towards plant-based choices, and to highlight practical issues for implementation at larger scale.

**Results:** Few studies exist on the effect of nudges on plant-based consumption, and even less have explored consumer attitudes towards such interventions. Manipulation of food product order or proximity influences food choices. Placing vegetables first combined with allowing self-composition of salad, or providing status-quo (default) servings increase actual vegetable intake without affecting total quantity. In foodservice operations, the introduction of plant-based foods should be done with attention to the context and the adjacent choices. For consumers cooking at home an effective strategy is setting of reasonable goals towards a number of plant-based meals per week together with a reminder using IT.

**Conclusion:** Nudging could be a strategy to make plant-based choices easier for the consumer both through foodservice and at home. In foodservice, placing of vegetables first and provision of default choices could be a first step. For cooking at home, nudge through self-monitoring strategies and setting achievable goals.

**Disclosure:** none declared.

NR. 13

### **Die Deckung des Proteinbedarfs mit pflanzlicher Ernährung**

*Leitzmann, C.*

Institut für Ernährungswissenschaft der Universität Gießen, Gießen, Germany

Die Empfehlungen zur Proteinzufuhr haben sich im Laufe der Zeit immer wieder verändert und sind weiterhin Gegenstand der wissenschaftlichen Diskussion. Ein physiologischer Bedarf besteht streng genommen nur für Stickstoff und für die neun unentbehrlichen Aminosäuren. Da der Körper sie nicht selbst bilden kann, müssen sie regelmäßig mit der Nahrung zugeführt werden.

Der Mindestbedarf an Protein ersetzt die obligatorischen Stickstoffverluste. Stickstoffbilanzminima finden sich bei gemischter Kost – auch wenn die Proteinkomponente nur aus pflanzlichen Quellen besteht – bei einer Proteinzufuhr zwischen 0,40 und 0,65 g/kg KG/d. Durch Einbeziehung der individuellen Schwankungen und bei Berücksichtigung einer häufig verminderten Verdaulichkeit in einer gemischten Kost erhöht sich dieser Wert auf 0,80 g Protein/kg KG/d. Dabei wird eine ausreichende Zufuhr an

Nahrungsenergie vorausgesetzt. Bezogen auf das Referenzkörpergewicht entspricht das für Erwachsene bis 65 Jahre eine Zufuhr von 47 bis 57 g Protein/d.

Für Erwachsene ab 65 Jahren gibt die DGE erstmals einen Schätzwert für eine angemessene Proteinzufuhr von 1,0 g/kg Körpergewicht pro Tag an. Die FAO/WHO hält eine Zufuhr von 0,9 bis 1,1 g für gesunde Senioren für angemessen. Das entspricht einer Zufuhr von 57 bis 67 g Protein/d. Diese Mengen können mit einer vollwertigen pflanzlichen Ernährung problemlos erreicht werden.

Für eine optimale Proteinzufuhr gibt es keinen zuverlässigen Test aber zwei Qualitätsmerkmale, nämlich die Biologische Wertigkeit und die gesundheitlichen Wirkungen pflanzlicher gegenüber tierischen Proteinen.

Die Biologische Wertigkeit eines mit der Nahrung zugeführten Proteins wird durch die Fähigkeit bestimmt, körperspezifische Proteine zu bilden. Als Referenzwert dient Vollei, dessen biologische Wertigkeit als 100 definiert ist. Entscheidend ist der Gehalt an essentiellen Aminosäuren. Je ähnlicher die Aminosäuren-Zusammensetzung der Nahrungsproteine dem Bedarf des Körpers an Aminosäuren entspricht, desto weniger Nahrungsproteine werden benötigt. Bei gleichzeitigem Verzehr verschiedener Proteinträger kann die Biologische Wertigkeit durch sogenannte Aufwertungseffekte erheblich gesteigert werden.

Die Proteinzufuhr aus pflanzlichen Lebensmitteln bringt eine geringere Aufnahme einer Reihe von weniger wünschenswerten Begleitstoffen mit sich, wie gesättigte Fettsäuren, Cholesterin und Purine. Verarbeitete pflanzliche Lebensmittel enthalten meist weniger Salz, säurebildendes Phosphat und Sulfat und schützen vor einer latenten Übersäuerung. Insgesamt sind pflanzliche Proteine günstiger als tierische Proteine.

**Disclosure:** none declared

NR. 14

### **Cultured meat: quo vadis?**

*Post, M.J.*

Maastricht University, Maastricht, Netherlands

In spite of the (slowly) growing number of vegetarians and vegans in some European countries, the WHO prognosticates that global meat consumption will rise with 70% until 2050. This is partly due to the increase in population but mostly to increasing welfare in Asian and African countries. Meat is a resource intense food and has a substantial impact on greenhouse gas emission. In addition, concern about animal welfare continues to grow. It is therefore inevitable to look at alternative proteins as a food source, or to create meat with a resource extensive, sustainable and animal friendly technology. In 2013, we presented the world's first hamburger from cultured bovine stem cells applying cell culture and tissue engineering technology derived from medical research. Since then, 7 companies have started the path to bring the products of this technology to the consumer. These companies have the challenging task to create affordable, high quality meat at large scale that is approved by regulatory agencies. Part of the science and engineering still needs to be extended to achieve these goals, but the state-of-the-art is already quite advanced. It is evident from public reactions that the idea of a future with cultured meat incites conflicting emotions that are different from medical applications of tissue engineering both in strength and quality. The emotions need to be understood, taken serious and managed appropriately. Even if the final meat products are biologically and biochemically identical to livestock meat products they will still be different from a cultural point of view. It remains to be determined what this new place will be but it is likely to be in between plant and livestock-animal foods. State of the art of the technology and its place in society will be discussed.

**Disclosure:** Mark Post is co-founder and shareholder of MosaMeat, B.V.

NR. 15

### **Supplementierung kritischer Mikronährstoffe bei pflanzlicher Ernährung aus der Sicht von Ernährungsexperten – eine anonyme Befragung auf dem VegMed Kongress 2018**

*Kessler, C.; Matthiae, D.; Jeitler, M.*

Charité Universitätsmedizin Berlin und Immanuel Krankenhaus Berlin, Berlin, Germany

Während des VegMed- Fachkongresses wird eine Befragung der TeilnehmerInnen zu kritischen Mikronährstoffen bei pflanzlicher Ernährung sowie deren Supplementierung durchgeführt.

Ziel der Befragung ist es, Aufschluss darüber zu erlangen, wie sich ExpertInnen, die sich selbst vorwiegend pflanzlich ernähren, bzgl. Risikobewertung und Supplementierung kritischer Mikronährstoffe selbst verhalten. Von Interesse ist vor allem, ob auf diesem Gebiet Expertenmeinung und offizielle Empfehlungen kongruent sind.

Befragt werden sollen alle volljährigen TeilnehmerInnen des Kongresses VegMed2018 zu pflanzenbasierter Ernährung in der Medizin. Die Teilnehmenden werden eingeladen, anonym und einmalig einen medizinsoziobehavioristisch-orientierten Kurzfragebogen zu den oben genannten Themenbereichen vor Ort zu beantworten (Dauer 10–15 min.).

Es werden international validierte Fragebogen sowie selbst entwickelte Fragen gestellt.

**Disclosure:** none declared

NR. 16

### **Session zur VeChi-Studie**

*Keller, M.; Weder, S.; Hoffmann, M.*

Fachhochschule des Mittelstands, Cologne, Germany

Die VeChi-Studie (Vegetarian and Vegan Children Study) ist eine Verbundstudie und besteht derzeit aus zwei Teilen: der VeChi Diet-Studie und der VeChi-Youth-Studie. Die VeChi Diet-Studie (Studie zur Ernährung von vegetarisch, vegan oder mit Mischkost ernährten Kleinkindern in Deutschland) untersucht im Rahmen einer bundesweiten Erhebung das Ernährungsverhalten sowie die Energie- und Nährstoffzufuhr von ein- bis dreijährigen Kindern, die sich vegetarisch, vegan oder mit Mischkost ernähren. Die Studie ist ein gemeinsames Forschungsprojekt der Fachhochschule des Mittelstands (FHM), der Universität Bonn (DONALD Studie) und des Instituts für alternative und nachhaltige Ernährung (IFANE). Gefördert wird das Projekt von der Erna-Graff-Stiftung für Tierschutz. Die VeChi-Youth-Studie (Studie zur Ernährung und Gesundheit von vegetarisch, vegan oder mit Mischkost ernährten Kindern und Jugendlichen in Deutschland) untersucht an drei Studienzentren (Berlin, Herdecke, Filderstadt) das Ernährungsverhalten, die Energie- und Nährstoffzufuhr sowie den Gesundheitsstatus von im Vergleich zur o.g. Studie bereits älteren Kindern und Jugendlichen im Alter von 6 bis 18 Jahren, die sich vegetarisch, vegan oder mit Mischkost ernähren. Die Studie ist ein gemeinsames Forschungsprojekt der Fachhochschule des Mittelstands (FHM), der Universität Bonn (DONALD Studie), der Charité Universitätsmedizin und Immanuel Diakonie Berlin, der Universität Witten-Herdecke, des Gemeinschaftskrankenhauses Herdecke und der Filderklinik Filderstadt-Bonlanden. Das Projekt wird vom Bundesministerium für Ernährung und Landwirtschaft (BMEL) gefördert. In der Session werden erste Ergebnisse der VeChi Diet-Studie sowie das Studiendesign der VeChi-Youth-Studie vorgestellt.

**Disclosure:** none declared

NR. 17

### **30 Jahre vegane Therapie und Prävention mit Intervallfasten und Bewegung**

*Bracht, P.*

Private Practice, Bad Homburg, Germany

Mit veganer Ernährung wird der Körper mit den optimalen Bau- und Betriebsstoffen versorgt. Die Fastenintervalle sorgen dafür, dass die Schutz- und Heilmechanismen ihre volle Wirkung entfalten können. Damit wird die Wirkungsweise der Ernährung noch einmal deutlich gesteigert. Doch erst die spezielle Stoffwechsoptimierung über die Funktion der Muskeln, Faszien und Knochen macht es möglich, dass der Mensch seinen individuell bestmöglichen Gesundheitszustand wirklich erreicht. Daher gehört Bewegung in die ganzheitliche Therapie bei Krankheiten dazu. Frau Dr. Bracht wird über ihre 30-jährigen Erfahrungen als Ernährungsärztin berichten. Sie wird ihre Methode vorstellen und Fallbeispiele aus ihrer Praxis mitbringen.

**Disclosure:** none declared

NR. 18

### **Physicians Association for Nutrition (PAN) establishing a new medical organization: how do we advance evidence-based nutrition?**

*Oppenrieder, N.*

Physicians Association for Nutrition, Germany

In this workshop we introduce the newly established medical organization “Physicians Association for Nutrition” (PAN) and present its structure, current projects and long term goals. A particularly important element of this workshop is an open discussion to explore the most effective and longest lasting ways of advancing evidence-based nutrition in the fields of medicine and politics and in the general public. We will also be happy to inform you about the various opportunities for cooperating with PAN.

**Disclosure:** none declared

NR. 19

### **The concept of non-violence in ancient india**

*Gupta, S.N.*

JS Ayurveda College, Nadiad, India

This seminar will take you into the depth of time in order to explore the philosophical and medical sources of literature nurturing the motives of the world’s largest population of Vegetarians.

The prime goal of every living being is to seek happiness. In modern societies, in spite of tremendous material and technical achievements, an alarming increase in unhappiness and depression is observed. Why is this so?

As a hypothesis, one reason could be that human thinking and behavior in modern societies are ignoring core life governing principles, which have been formulated as basic principles or laws in the literature of ancient cultures and their sciences. One of these principles could be called “holism” – the theory that all living beings are interconnected. As body, mind and spirit in individual living beings are inseparable components, so are all living beings interrelated, composing life in general as an indivisible phenomenon. Consequently, if a small fraction of existence is perturbed, the rest of the existence will also suffer.

In the earliest Indian literature, the Vedas, this principle of holism is considered to be a fundamental reality of existence. The Yajur-Veda e.g. states: “Those, who see all beings as themselves, do not feel infatuation or anguish, for they experience oneness with all these beings.” This statement needs explanation.

Newton’s laws of motion are imbedded in day-to-day thinking of modern times. Newton declared that every action brings about an opposite reaction of equal force. The Vedic law of action (karma) - often referred to as

the natural law of cause and effect – states that every action brings about an equal reaction of similar qualities. Metaphorically speaking – fruits are always according to their seeds! In daily life, this subtle law of cause and effect is said to govern all our actions and their results, even though we might not be conscious about these connections.

If we want to make use of this law for our personal welfare and happiness, a simple practical guideline expounded in many Vedic texts, can serve as an ethical principle: “The behavior of others, which one does not like to be affected of, one should not apply on others.” Therefore, if we want to live, we should let others live. While, if we create unrest among other living beings, this unrest will eventually return to us. So if animals are tortured by human beings, nature will create means to torture the torturers. Mad cow disease, swine flu and bird flu might not be mere co-incidences.

On the basis of the same law, the principle of ahimsā (non-harming any being) originated in ancient India. The Traditional Indian System of Medicine (Ayurveda) e.g. established ahimsā as the prime and foremost factor promoting vitality and longevity of living beings. If we support the natural course of the lives of animals, we ourselves will be awarded with a life with less external threat. Astonishingly, in Ayurvedic texts, descriptions of meats and their indications are to be found. But meat was only allowed to serve as a medication in restricted amounts in cases of emergency e.g. in severe underweight or loss of strength. So in the context of medicine, the principle of non-violence was adjusted in order to save human life. The difference in motivation seems to be of prime importance. But never meat was recommended as a regular or healthy food in Ayurvedic texts.

This practice oriented approach towards the use of meat in a medical context and the ethical tenets of ancient Indian philosophy supporting non-violence will be discussed and critically evaluated in the seminar.

**Disclosure:** none declared

NR. 20

### **Vegane Kost als Therapie bei krankheitsbedingter Mangelernährung – Möglichkeiten und Grenzen**

*Ludescher, G. und Team*

Gesundheitszentrum PrimaVita am Waldfriede Krankenhaus, Berlin, Germany

Vegane Ernährung wird häufig als defiziente Ernährungsform angesehen. Patienten mit einer krankheitsbedingten Mangelernährung, z.B. bei Tumorerkrankungen oder chronisch entzündlichen Darmerkrankungen, bedürfen dringend einer hochkalorischen Ernährung als wichtigem Bestandteil der Therapie. Aufgrund der steigenden Anzahl von Patienten mit veganer Lebensweise liegt hier eine besondere Herausforderung für die Ernährungstherapie. Im Hinblick auf Ernährungsberatung, enterale und parenterale Therapie. In diesem Workshop soll daher dieses tägliche Problem im stationären und ambulanten Bereich behandelt werden. Im Fokus stehen der aktuelle wissenschaftliche Stand und die praktische Umsetzung inkl. Verkostung.

**Disclosure:** none declared

NR. 21

### **Medizin und Menschlichkeit (MuM)**

*Seifert, P. und Team*

Medizin und Menschlichkeit e. V., Berlin, Germany

Bei Medizin und Menschlichkeit geht es um das Erforschen der Frage, was tiefe Menschlichkeit mit Heilung zu tun hat – um dann unsere Gesellschaft über die Medizin hinaus dafür zu sensibilisieren. Unsere Vereinskultur und unsere Veranstaltungen sind geprägt von Achtsamkeit, authentischer Begegnung und Offenheit für Vielfalt und Komplexität. MuM ist persönlicher und kollektiver Entwicklungsraum und eine stetig weiter wachsende Herzengemeinschaft für alle Heilberufe.

Auf der VegMed 2018 setzen wir uns das Motto «Soul Food – Nahrung für die Seele» und laden in verschiedenen Formaten dazu ein, mit sich und anderen in eine Verbindung zu treten, die auf einer tieferen Ebene nährt.

Wir freuen uns darauf, Sie an unserer Soul Food Station oder in unserem Workshop kennen zu lernen und uns mit Ihnen auszutauschen.

**Disclosure:** none declared

NR. 22

### **Edible herbs and their health benefits**

*Braunewell, H.*

Stiftung Reformhaus Fachakademie / Akademie Gesundes Leben, Oberursel, Germany

Dandelion, stinging nettle, bishop’s goutweed and others offer more than a mere existence as inconvenient weeds. During this workshop participants experience details worth knowing practically as well as on theory. Touching, smelling, tasting and even listening are items on the agenda of this workshop respecting an holistic point of view. Which parts to be used, correct times of harvesting, processing as fresh vegetable, toppings of salads or desiccating – the given advice can be transferred directly to daily life. Information about how to safely identify, find good collection places and potential dangers makes this workshop perfect for getting started with edible herbs. On top: Recipes to try out.

**Disclosure:** none declared

NR. 23

### **Plant based pregnancy, lactation and infancy: benefits and risks**

*Masson, L.*

National Institute of Integrative Medicine, Sydney, Australia

In this workshop Dr. Masson will review the benefits of a whole food plant-based diet for women during pregnancy and breastfeeding, and for young children. She will also point out potential deficiencies associated with a vegan diet and supplements that can prevent these deficiencies. Recent research has revealed nutritional deficiencies associated with an increased risk of congenital defects and developmental and behavioural problems, including ADHD and autism spectrum disorders. Dr Masson will discuss this research and present a guideline on dietary and nutritional support for pregnancy and lactation that may help to minimize those risks.

**Disclosure:** none declared

NR. 24

### **Dietary guidelines for italian vegetarians: the VegPlate, a mediterranean-based vegetarian food guide (PiattoVeg- Vegplate)**

*Baroni, L.*

Società Scientifica di Nutrizione Vegetariana, Italy

Since the ‘90s, dietary guidelines specifically designed for vegetarian people have been published (Vegetarian Food Guides, VFGs). They differ from the dietary guidelines for the general population because they include only foods consumed by vegetarians.

After the publication of the First Loma Linda Vegetarian Pyramid, other VFGs have been proposed. New knowledge on vegetarian nutrition, based on the many studies published to date, led to the identification of the main criteria on which a nutritionally adequate and healthy plant-based diet should be constructed. In summary: 1) consuming mainly whole or minimally processed plant foods, while respecting the variety of the choices and the calorie requirements; 2) dairy and egg consumption are considered optional, i.e., unnecessary for the nutritional adequacy of a well-planned plant-based diet, and depending only on individual preferences; 3) close attention should be paid to the total amount and the type of dietary fats; 4) close attention should be paid to the critical nutrients of the diet: omega-3 fatty acids, vitamin B-12, calcium and vitamin-D.

These criteria, which stretch across all the main VFGs, are also respected in the new VFG for Italian people, based on the recommendations of the 2014 Italian DRIs (LARN). VegPlate ([www.VegPlate.info](http://www.VegPlate.info)) includes 6 main food groups (grains, protein foods, vegetables, fruits, nuts and seeds, fats). Two added cross-sectional groups propose special recommendations for the critical nutrients: the first includes the calcium-rich foods of the previous 6 groups but fats, and the second includes the omega-3-rich foods present in some foods belonging to the nuts and seeds and to the fats groups. Complementary to the graphic are special recommendations for the critical nutrients vitamin-B12 and vitamin-D. The intake of critical nutrients, in contrast with that of all the other nutrients, is not provided solely by the consumption of all the plate groups, according to the quantities of the serving system. A small amount of “discretionary” calories completes the plate. Starting from the basic structure of the VegPlate, which is planned to be applied to adults, children and adolescents, some adaptations allow to obtain a guide suitable for infants, pregnant and lactating women, and a guide for planning low-fat vegan diets.

**Disclosure:** none declared

NR. 25

### **What about cheese?**

*Barnard, N.*

Physicians Committee for Responsible Medicine & George Washington University, Washington DC, USA

Dairy products are a major source of saturated fat, cholesterol, and sodium, all of which are concentrated in cheese, making it a potential contributor to overweight, diabetes, and cardiovascular disease.

Dairy products also contain estrogens. While the quantity of hormones in milk is small, hormones are concentrated as milk is converted to cheese and other high-fat dairy products, and studies have suggested that they may be sufficient to affect human biology. Specifically, in men, cheese consumption is associated with reduced sperm counts and impaired sperm morphology and motility. In women previously treated for breast cancer, high-fat dairy consumption is associated with a markedly increased risk of cancer-related mortality. The hormones in milk come from the fact that dairy cows are impregnated annually, and the production of estrogens increases over the course of gestation.

Dairy proteins—which are concentrated in cheese—appear to contribute to a surprising range of conditions, from asthma, to migraine and rheumatoid arthritis.

Some evidence suggests that cheese may be habit-forming. As dairy proteins are digested, they release opiates, called casomorphins, that bind to the opiate receptors of the brain. While they are not as powerful as recreational narcotics, evidence suggests that they may be sufficiently strong to lead to habitual intake.

There are many healthful replacements for cheese and other dairy products, which will be discussed.

**Disclosure:** none declared

NR. 26

### **Moving towards a plant-based diet**

*Englert, H.*

Fachhochschule Münster, Münster, Germany

Numerous studies have shown the positive effects of a meat-free diet on major challenges of our times, especially with respect to health and the environment. Already a reduction in meat intake can lead to a lowered risk in the context of chronic disease, can have a positive effect on health care costs, can reduce water and air pollution, and protect natural resources. These findings are increasingly recognized by the general public but they are still not sufficiently put into practice. The central question becomes: How to move towards a plant-based diet?

In order to transfer information as well as practical skills with respect to a plant-based diet to the general public lifestyle interventions on the community level seem to be a useful strategy. As part of the EUREGIO project “Healthy Lifestyle Communities” we are conducting an intensive intervention programme on the topic of healthy living in rural communities in Germany. The focus of attention is the individual citizen with their health needs and their perceived obstacles on the path towards healthy and sustainable lifestyle changes. Such obstacles are addressed on the individual level by means of health coaching and health checks as well as on the community level by means of didactically aligned seminar units conducted in larger groups, workshops, alumni groups, etc. The lifestyle programme primarily addresses four factors of good health: plant-based diet, stress management, physical exercise, and mutual support within the community. Reasons for and against the eating of meat are discussed and explored from various viewpoints with the aim of expanding the participants’ consciousness and initiating the process of change. In order to make healthy choices easier, tools such as nudging, self-tracking, and gamification are employed.

**Disclosure:** none declared

NR. 27

### **The future of nutrition – cultured meat as an ethical alternative?**

*Post, M. J.*

Maastricht University, Maastricht, Netherlands

Cultured or clean meat is meat made from animal cells, mostly designated skeletal muscle stem cells. Through their replicative capacity, the technology allows for a up to 1,000,000-reduction in required livestock, thereby saving feed and food resources, reducing environmental impact and improving animal welfare, all goals that align with the ideals of vegetarian and vegan communities. For those who do not like meat, judge it to be unhealthy or still have issues with using a small number of animals for human food production, the technology of culturing meat will be inconsequential or even unacceptable. The pragmatic attitude however would be to accept the technology for its larger societal merit even if it is not a personal favorite solution to generalized meat consumption.

From a biological point of view, cultured or clean meat is meat as we always have known it and will therefore be a product for the meat-eater that avoids to a large degree the negative externalities. It will also be a product with different cultural associations than traditional meat and in that sense, it is somewhere in between meat and plants. It is conceivable and even likely therefore, that the development of cultured or clean meat products will facilitate the transition from an animal-protein towards a plant-protein diet.

The lecture covers the technological state of the art as well as the larger societal questions around cultured meat.

**Disclosure:** Mark Post is co-founder and shareholder of MosaMeat, B.V.

NR. 28

### **Nudging adolescents towards plant-based food choices**

*Ensaaff, H.*

School of Food Science and Nutrition, University of Leeds, Leeds, England

Substantial health benefits are associated with a plant-based diet, dominated by plant foods, with limited processed foods and animal products. Given adolescents’ low fruit and vegetable consumption as well as their propensity for fast food, potential strategies to promote dietary behavior change are needed. In this presentation, research relating to adolescents’ perspectives on plant-based diets and how nudging strategies may be implemented to shift adolescents towards plant-based foods will be considered.

Research has shown a clear disconnect between plant-based foods and the parameters that adolescents use to make food decisions. Therefore there are substantial barriers to the adoption of a plant-based diet for adolescents. These barriers need to be considered so that plant-based foods can be represented to change adolescents' dietary behavior.

There is growing evidence for the importance of choice architecture and nudging strategies in implementing dietary behavior change, including interventions related to fruit and vegetable selection. Research within a real-world setting of a secondary school canteen will be considered. Results indicated how choice architecture can be adjusted and nudge strategies developed and implemented to increase selection of plant based food items by adolescents. The findings point to the potential of choice architecture within real-world settings, and its role in influencing adolescents' daily food choices and bringing about a positive change towards a more plant based diet.

**Disclosure:** The study presented was funded by the Alpro Foundation

NR. 29

### **Ernährung und Postwachstumsökonomie**

*Paech, N.*

Plurale Ökonomik, Universität Siegen, Siegen, Germany

Die Idee einer nachhaltigen Entwicklung steht in vielerlei Hinsicht an einem Wendepunkt. Sie erweist sich als unvereinbar mit wirtschaftlichem Wachstum. Folglich ist es an der Zeit, die Bedingungen und Möglichkeiten einer Postwachstumsökonomie auszuloten. Letztere ist das Resultat eines prägnanten Rückbaus arbeitsteiliger, geldbasierter und globalisierter Versorgungsmuster. Stattdessen werden Suffizienz und urbane Subsistenz als Ergänzung eines merklich reduzierten und zugleich umstrukturierten Industriesystems bedeutsam sein. Aus Konsumenten werden souveräne Prosumenten, die mittels reaktiver Subsistenzressourcen (z.B. Handwerk, Nahrungserzeugung) zur gemeinschaftlichen Versorgung beitragen. Zudem ist die Postwachstumsökonomie durch Sesshaftigkeit gekennzeichnet, also durch Glück ohne Kerosin. Dabei kommt dem Ernährungssektor eine immense Bedeutung zu, denn von ihm hängt die Befriedigung des wichtigsten aller Grundbedürfnisse ab. Im Fokus einer wachstumskritischen Nachhaltigkeitsauslegung steht neben ökologischen Fragestellungen die Resilienz (Krisenstabilität) der Nahrungsversorgung. Dabei stellt sich heraus, dass eine vegetarische Ernährung nicht nur dem Aspekt des Tierwohls und der menschlichen Gesundheit dienlich ist, sondern auch die ökonomische und soziale Resilienz stärken kann.

**Disclosure:** none declared

NR. 30

### **Tue Gutes und rede darüber – Gesprächsrunde mit erfolgreichen Health-Influencern**

*de Jong, M.*

Food Elements – Positive Vegan Eating Magazine, Berlin

Tue Gutes und rede darüber – Öffentlichkeitsarbeit für den guten Zweck. Vier Menschen, vier Ansätze. Wer Aufklärung leisten will, muss einen Kanal haben mit dem er Menschen erreichen kann. In unsere Gesprächsrunde haben wir Menschen und mit unterschiedlichen Ansätzen eingeladen. Buch, Blog, Ernährungs- oder Yogaschule. Welche Strategie erreicht mehr Menschen?

**Disclosure:** none declared

NR. 31

### **Slicing into the meaty topic of vegetarianism in india: boon or bane?**

*Murthy, V.*

Ayuwave Institute, London, England

In this presentation Dr Vijay Murthy will critically appraise the traditional practices of vegetarianism within the context of cultural, social, historical and political influences on dietary beliefs. While vegetarianism and veganism are a novelty for the traditionally meat eating west, more so amongst individuals and emerging communities of health minded and/or sustainability oriented contemporaries, for most of the modern Indian population, vegetarianism is not a choice. Rather, it is one of several interconnected values that are handed down in a rigidly packaged tradition. As such important lessons can be learnt about the impact of healthy vegetarianism and unhealthy vegetarianism on the health or ill-health of individuals and communities. Moreover, the example of Indian vegetarian values can offer insights into the complex outcomes of dietary choices on the overall tapestry of society and eventually on the health of populations and the health of our planet. There is a call for caution when we can either be divided or untied by such strong forces as our "daily food".

**Disclosure:** none declared

NR. 32

### **Die Sojakontroverse – Wunderbohne oder Gefahrenquelle für die Gesundheit?**

*Rittenau, N.*

Plant-Based Institute, Berlin, Germany

Über kaum ein anderes Lebensmittel wird so kontrovers diskutiert wie über Soja. Die einen sehen in Soja eine Wunderbohne, die aufgrund ihrer Isoflavone gegen Brustkrebs, Wechseljahresbeschwerden und Bluthochdruck helfen soll, während andere Stimmen Soja in Verbindung mit Störungen im Hormonhaushalt, Komplikationen mit der Schilddrüse und der Entstehung von einigen Krebsarten in Verbindung bringen. Aufgrund sich widersprechender In-vitro- und In-vivo-Studienergebnisse an Mensch und Tier in den vergangenen Jahren erschienen immer wieder kontroverse Schlagzeilen über Sojaprodukte in den Medien.

Zahlreich sind auch die Berichte über die Auswirkungen des Sojaanbaus auf den Regenwald und die Verbreitung von angeblich gentechnisch verändertem Soja in Lebensmitteln. Welche dieser Aussagen hält einer strengen wissenschaftlichen Betrachtung stand, woher kommen diese unterschiedlichen Stimmen und welche Personengruppen sollten tatsächlich auf Soja verzichten? Während in Boulevardmedien, populärwissenschaftlichen Veröffentlichungen und in vielen Diskussionen innerhalb der sozialen Medien Uneinigkeit herrscht, ist die Position nationaler und internationaler Ernährungs- und Krebsgesellschaften zu Soja einheitlich und eindeutig.

Angefangen vom «Bundesinstitut für Risikobewertung» über die «Academy of Nutrition and Dietetics» hin zum «American Institute for Cancer Research» und dem «World Cancer Research Fund» lautet die Kernaussage: Sojaprodukte sind mit Ausnahme von Allergikern für alle Personen, unabhängig von Geschlecht und Krebserkrankung, sicher. Jene im Soja enthaltenen Phytoöstrogene, sogenannte Isoflavone, wirken um ein Vielfaches schwächer und haben andere Rezeptorbindungsaffinitäten als körpereigene Östrogene. Sie wirken in vielen Fällen entgegen der ursprünglichen Erwartungen anti-östrogen in prämenopausalen Frauen und können daher genauer gesagt eher als «Selektive Östrogenrezeptor-Modulatoren» bezeichnet werden.

Bei kontinuierlichem, moderatem Verzehr ab der Jugend konnte Soja in epidemiologischen Untersuchungen das Risiko für gewisse kanzerogene Erkrankungen reduzieren und zeigte bei regelmäßigem Verzehr sowohl Blutdruck- als auch Cholesterinsenkende Auswirkungen und so darf seit 1999 in den Vereinigten Staaten der Health Claim «25 Gramm Sojaprotein täglich als Teil einer Ernährung arm an gesättigten Fetten und Cho-

lesterin, kann das Risiko von Herzerkrankungen reduzieren» verwendet werden.

Im Gegensatz zu ersten Untersuchungen an Geparden und neonatalen Nagetieren konnten Untersuchungen an Primaten und schließlich Studien an Menschen konstant zeigen, dass Sojaisoflavone die Fruchtbarkeit und den Hormonhaushalt von Männern nicht negativ beeinflussen. Dies führt zum Rückschluss, dass die Bevölkerung sich weniger Sorgen um Fremdstrogene aus der Sojabohne als vielmehr um jene im Thermopapier von Kassenbons, um Parabene in Pflegeprodukten und um BPA in Flaschen, Geschirr und Verpackungen machen sollte.

**Disclosure:** none declared

NR. 33

### **Worldwide vegan – a pragmatic approach**

*Lennaert, T.*

Author, ProVeg, Berlin, Germany

The road to a plant-based world is still long. In order to get there, it is good to dream, but we also need to be realistic. Both society and individuals today are incredibly dependent on the use of animals. Breaking through this is probably the most difficult social issue a group of humans has ever taken on. In this talk, Tobias suggests that at this point in time, our movement needs a high dose of pragmatism, and offers some – sometimes counter-intuitive – strategies to bring our ideals ever closer.

**Disclosure:** none declared

NR. 34

### **Plant-based diets in the prevention and treatment of chronic disease**

*Davis, B.*

Diabetes Wellness Research Project, Canvasback Missions, Majuro, Marshall Islands

This presentation provides an update on plant-based diets in the prevention and treatment of chronic disease. Brenda summarizes the recent research comparing similar, health-conscious meat eaters, semi-vegetarians, pesco-vegetarians, lacto-ovo vegetarians and vegans. The impact of dietary choices on the risk of heart disease, cancer, diabetes and other chronic diseases is explored, and evidence for the use of plant-based diets in the treatment of these diseases reviewed. Practical suggestions for maximizing the protective capacity of plant-based diets are provided.

**Disclosure:** none declared

NR. 35

### **So geht Gesundheit – Frag´ einen Veggie-Arzt**

*Bracht, P.*

Private Practice, Bad Homburg, Germany

«Gesundheit ist der Zustand vollständigen körperlichen, geistigen und sozialen Wohls», so die Definition der WHO. Frau Dr. Bracht führt Sie in ihrem Vortrag zu Erkenntnissen, die wahrscheinlich schon in uns schlummern, für die wir aber wieder einmal einen Schubs brauchen, um sie umzusetzen. Wie können Menschen ihren inneren Arzt gebrauchen, um ihre Gesundheit wiederherzustellen. Gesunde naturbelassene Lebensmittel, Intervallfasten – Intervallessen, Entfernen von krankmachenden Faktoren, Schadstoffen im Essen, in Kosmetika, in der Wohnung etc., Entgiftungskuren, Bewegung, mentale Rückzüge und vieles mehr sind Möglichkeiten, die in dem Vortrag aufgezeigt werden.

**Disclosure:** none declared

NR. 36

### **Vegan nutrition in sport and health: boom or ancient wisdom? The healthy human as prerequisite to the successful athlete.**

*Wirnitzer, K.*

Zentrum für Forschung und Wissensmanagement, Pädagogische Hochschule Tirol, Innsbruck, Austria

Technology supported food development is an important aspect of the 21st century. At the same time there is a strong trend to natural and whole plant-food diets as practicable tools to be implemented in daily routine. In ancient times gladiators and prominent philosophers already knew that plant-based diets (vegetarian, vegan) lead to peak performance. Data on a highly underestimated body of evidence-based scientific information still mostly neglected is presented, and a more basic but dual approach to food bioengineering and human development is provided. Considering the current studies showing the benefits of vegetarian kinds of diet on health and sports performance this brief overview is spanning from the myths about meat to the health threatening effects of foods from animal sources by giving a short outline of the development of plant-based diets through the centuries until today. This contribution reminds of the fact that vegan diets not only supply all nutrients in adequate amounts (except for vitamin B12), but has enabled recreational as well as professional athletes to achieve top performance in their chosen discipline. The knowledge about the benefits of a vegan diet on human performance has the potential to motivate consumers to change their diet, which is in addition to health also beneficial for the environment, the climate as well as animal welfare.

**Disclosure:** none declared

NR. 37

### **Vegan unter anderen Umständen – gesunde Schwangerschaft**

<sup>1</sup>*Hercegf, C.*; <sup>2</sup>*Gebhardt, S.*

<sup>1</sup>Dietician, Berlin, Germany

<sup>2</sup>Nutritional scientist, Berlin, Germany

Viele vegane Schwangere sind verunsichert: ist es wirklich sicher, sich während der Schwangerschaft rein pflanzlich zu ernähren? Aufgrund mangelnder Erfahrung bekommen sie oft wenig Unterstützung von der Familie, Ärzten und Ernährungsberatern.

Doch eine gut durchdachte vegane Ernährung bietet zahlreiche gesundheitliche Vorteile. Und das gilt für alle Lebensabschnitte – auch die Schwangerschaft und Stillzeit. Dass immer mehr Wissenschaftler und Ärzte eine vollwertige Ernährung ohne tierische Zutaten unterstützen, zeigt ihre wachsende Bedeutung.

Carmen Hercegf und Sarah Gebhardt geben wertvolle Informationen für die gelungene Schwangerschaft und die Zeit danach. Sie erklären wichtige Nährstoffe und die praktische Umsetzung einer ausgewogenen und vollwertigen Ernährung in Schwangerschaft und Stillzeit. Außerdem berichten Sie von den Erfahrungen, die sie und verschiedene Ernährungsmediziner, Gynäkologen, Hebammen und Kinderärzte mit veganen Schwangeren gemacht haben.

**Disclosure:** none declared

NR. 38

### **Von jetzt an vegan – so mache ich es richtig**

*Siebert, S.*

Stiftung Reformhaus Fachakademie / Akademie Gesundes Leben, Oberursel, Germany

Veganismus liegt im Trend. Und veganes Essen hat – bei richtiger Ernährung – viele gesundheitliche Vorzüge. So sind Veganer mit vielen Nährstoffen sogar besser versorgt als der Durchschnitt der Bevölkerung. Ein gesunder Lebensstil und Qualitätsbewusstsein bei der Lebensmittelauswahl unterstützen diesen Effekt noch. In diesem Vortrag geht es um die Frage, wie man eine vegane Ernährung optimal in die Praxis umsetzen kann.

Das Modell des «Veganen Tellers» dient dabei als Grundlage, da es die Lebensmittelauswahl eines Tages veranschaulicht. Weitere Fragen die beantwortet werden, sind:

- Welcher Esstyp bin ich?
- Wie gestalte ich meine Mahlzeiten?
- Worauf sollte ich beim Einkauf achten?

**Disclosure:** none declared

NR. 39

### **Pflanzenbasierte Ernährung und Gesundheit aus wirtschaftlichen Gesichtspunkten**

*Wirsam, J.*

Hochschule für Technik und Wirtschaft (HTW) Berlin, Berlin, Germany

Ausgangspunkt für Innovationen sind oftmals «Life-Needs», zentrale Bedürfnisse der Menschen, die befriedigt werden sollen. Krankheiten gehören zu den elementaren Herausforderungen und es werden Milliarden-Budgets zur Heilung und Entwicklung von Medikamenten bereitgestellt. Ernährung wird verstärkt als Ursache einer Vielzahl von Krankheiten identifiziert. Mit dem Buch «How not to Die» hat Dr. Michael Greger ein weltweit beachtetes Werk geschrieben, welches die 15 häufigsten Todesursachen der westlichen Welt behandelt. Es werden Krankheiten wie Krebs, Diabetes, Herzerkrankungen, Bluthochdruck etc. diskutiert und anhand von wissenschaftlichen Studien betrachtet.

Der Vergleich von konventioneller Medizin und «alternativen» Ansätzen stellt daher ein sehr großes Feld für Forschung und Entwicklung dar, in der Hoffnung das neue innovative Konzepte, die auf Ernährung und Bewegung abzielen, deutlich größere Effekte und zugleich wirtschaftlich sinnvollere Ansätze hervorbringen und so das Leiden vieler Betroffener lindern oder die Krankheit sogar komplett stoppen können.

Im Rahmen der Innovationsforschung von Prof. Wirsam werden alternative und konventionelle Behandlungsmethoden aus betriebs- und volkswirtschaftlicher Perspektive betrachtet und anhand von Fallstudien (analog zu «How not to die» 15 häufigste Todesursachen) miteinander verglichen. Erkenntnisse und Einblicke in aktuelle Entwicklungen, neuen Behandlungsmethoden, zukünftigen Chancen werden in den jeweiligen Themenblöcken angeboten.

**Disclosure:** none declared

NR. 40

### **Soulfood – Nahrung für die Seele, ein MuM-Workshop**

*Seifert, P. und Team*

Medizin und Menschlichkeit e.V., Berlin, Germany

In dem vielfach durch unser MuM Team erprobten Workshop wollen wir Wege aufzeigen, wie unsere Bedürfnisse nach Stille, Kommunikation, Gehört werden, Wertschätzung und Authentizität auf einfache Weise erfüllt werden können. Wir werden in Einzelarbeit Räume für die Begegnung mit sich selbst und in Kleingruppenarbeit die Begegnung mit anderen eröffnen, wir werden schweigen und nach innen horchen und wir werden teilen und zuhören. In unserer Erfahrung eröffnet dies ein Feld der Achtsamkeit und menschlichen Verbindung welches über den Workshop hinaus wirkt.

**Disclosure:** none declared

NR. 41

### **Intermittent fasting and plant-based nutrition – a longevity concept?**

*Michalsen, A.*

Charité Universitätsmedizin Berlin und Immanuel Krankenhaus Berlin, Berlin, Germany

Experimental research in the last decades has consistently shown that caloric restriction, periodic and intermittent fasting extends the life span of organisms and delays the onset of most age-associated chronic diseases. Distinct mechanisms behind these phenomena have been described, among them reduced mitochondrial oxidative damage, increase of autophagy, the production of ketones, hormetic stress responses and the reduction of IGF-1, insulin and leptin as known promoters of age-associated metabolic disease. Notably relevant parts of these mechanisms can also be elicited by minimizing the intake of animal protein and refined sugars as fructose and glucose. Therefore a wholesome plant-based diet might be a complementary way for maximizing health promoting effects of caloric restriction and fasting. Current ongoing clinical trials investigate the effects of vegan fasting-mimicking diets in different indications as hypertension, diabetes, and cancer.

**Disclosure:** none declared

---

## **Research Sessions**

---

NR. 42

### **Health status of vegetarian/vegan and omnivorous endurance runners – results from the NURMI-Study (Step 2)**

<sup>1</sup>Boldt, P.; <sup>2</sup>Knechtle, B.; <sup>3</sup>Nikolaidis, P.; <sup>4</sup>Lechtleitner, C.; <sup>5</sup>Wirnitzer, G.; <sup>6</sup>Leitzmann, C.; <sup>7</sup>Wirnitzer, KW.

<sup>1</sup>Faculty of Medicine at the University of Gießen, Germany

<sup>2</sup>Institute of General Practice and Health Services Research at the University of Zurich, Switzerland

<sup>3</sup>Exercise Physiology Laboratory Nikaia, Greece

<sup>4</sup>TEG in Innsbruck, Austria

<sup>5</sup>AdventureV & change2V in Stans, Austria

<sup>6</sup>Institute of Nutrition at the University of Gießen, Germany

<sup>7</sup>Centre for Research and Knowledge Management at the Pedagogical University Tyrol, Austria

**Purpose:** Since endurance running challenges body and mind to an extremely high degree, a good health status (HS) is inevitable. As the choice of an appropriate diet is a crucial factor in terms of health, the aim of the study was to investigate the HS of vegetarian/vegan endurance runners (VR) and compare it to omnivorous endurance runners (OR).

**Methods:** 281 recreational runners (159 women, 122 men) completed an online survey. We approached the HS using the dimensions “weight”, “smoking”, “perceived stress”, “chronic diseases”, “allergies/intolerances”, “regularly medication/supplement intake”, “health-related food choice”, “enhancement substance use” and “healthcare utilization”. Data analysis was performed by using analysis of variance and Chi-squared-test.

**Results:** There were 123 OR and 158 VR. 173 participants were classified as NURMI-Runners [103 half-marathoners (HM), 70 marathoners/ultramarathoners (FM)], 108 subjects were categorized as 10-km control group.

In neither dimension a remarkable difference between VR and OR was observed. Women reported more likely than men intake of hormones, mainly due to hypothyroidism and contraception. VR stated to choose food and to avoid certain ingredients (i.e. caffeine and cholesterol) for health reasons more often than OR. HM reported lowest stress levels and most rarely a weight loss due to a change in diet. FM stated lowest hormone intake.

**Conclusions:** Our results revealed that the endurance runners of our sample had a good HS, regardless of the race distance or diet choice. This demonstrated that adhering to both a vegetarian or vegan diet can be an appropriate and equal alternative to an omnivorous diet.

**Disclosure:** none declared

NR. 43

### Consumer acceptance of behavioral interventions towards plant-based choices in foodservice

<sup>1</sup>Dos Santos, Q.; <sup>2</sup>Monteleone, E.; <sup>3</sup>Giboreau, A.; <sup>4</sup>Castagna, E.; <sup>5</sup>Hartwell, H.; <sup>1</sup>Perez-Cueto, F.J.A.

<sup>1</sup>Department of Food Science at University of Copenhagen, Denmark

<sup>2</sup>Department of the Management of Agriculture, Forestry and Food Systems at University of Firenze, Italy

<sup>3</sup>Centre for Food and Hospitality Research at Institut Paul Bocuse, Lyon, France

<sup>4</sup>At Foundation Louis Bonduelle, Lille, France

<sup>5</sup>Faculty of Management at Bournemouth University, UK

**Purpose:** To evaluate the acceptability of behavioral interventions towards plant-based choices in foodservice by a sample of adolescents and older adults from DK, FR, IT and UK.

**Methods:** Cross-sectional study with 377 adolescents aged 12–19 years and 349 older adults aged 65+ who were part of VeggiEAT Project. VeggiEAT aimed to increase vegetables consumption across the lifespan in institutional foodservice. Participants reported their attitudes towards ten hypothetical interventions aimed at plant-based choices. Means and Standard deviation (SD) by age group were calculated for each intervention.

**Results:** The most acceptable intervention for adolescents is the provision of a green salad with lunch (mean 3.38; SD 1.32). For older adults, the highest-rated intervention was the use of posters by foodservice providers with simple and easy tips on how they could eat more vegetables (mean 3.59; SD 1.22). The use of posters showing happy adolescents eating vegetables and sad adolescents eating unhealthy was the less acceptable for this age group (mean 2.35; SD 1.25). For older adults, the less acceptable was a competition held by foodservice providers where the winner would be the one with the largest vegetable intake (mean 2.38; SD 1.18).

**Conclusions:** Provision of a by default serving of vegetables and use of posters with easy tips towards plant-based consumption could be acceptable for EU adolescents and older consumers respectively. Interventions targeting self-image or competitions should be avoided for promotion of plant-based eating for EU adolescents and older consumers respectively.

**Disclosure:** none declared

NR. 44

### Plant-based vs. animal-based protein and their impact on blood pressure in older consumers: a systematic review

Corneliussen, F.; Drülytė, D.; Araya-Zepeda, N.; Urllass, S.; Perez-Cueto F.J.A.

Department of Food Science, University of Copenhagen, Copenhagen, Denmark

**Purpose:** Systematic Review of the effects of animal vs. plant protein consumption on the development of cardiovascular disease factors in older consumers.

**Methods:** Systematic Review, including randomized control trials, cohort studies and observational studies. Three databases were used for article identification (PubMed, Ovid Medline and Web of Science). Keywords used were “plant protein”, “animal protein”, “cardiovascular diseases” and “elderly”. Main inclusion criteria were participants 60+ years old and articles published between 2000–2017.

**Results:** In total 297 articles were identified, of which only two met the inclusion criteria, one long term (15y), the other short term (6y) follow-up. BMI changes were not significant in either study. After 15 y regular consumption of plant proteins systolic (–2,64 mm/Hg) and diastolic (–1,75 mm/Hg) blood pressure (BP) levels decrease significantly. In the 6 months follow-up study plant protein consumption led to a drop in systolic (–8,70

mm/Hg) and diastolic (–6,50 mm/Hg) BP, whereas animal protein led to a modest decrease in systolic (–2,00 mm/Hg) and a modest increase in diastolic (+1,20 mm/Hg) BP.

**Conclusions:** Consumption of plant protein leads to a significant decrease in BP levels, suggesting that plant proteins are beneficial in preventing CVD, particularly in the short term. Since the reviewed studies were not fully comparable, it cannot be concluded that animal and plant proteins affect CVD factors differently in elderly. Another finding is that studies comparing health effects of plant vs. animal proteins are scarce. Hence new studies are needed focusing on different protein sources and their health benefit.

**Disclosure:** none declared

NR. 45

### Impact of elimination or reduction of dietary animal proteins on cancer progression and survival – a pilot study

<sup>1</sup>Aspalter, R.; <sup>1</sup>Bacsics, A.; <sup>1</sup>Dobner, T.; <sup>1</sup>Fuchs, S.; <sup>1</sup>Wolf, V.; <sup>1</sup>Demanega, M.; <sup>1</sup>Ricker, A.; <sup>1</sup>Seitz, J.; <sup>1</sup>Ritter, A.C.; <sup>1</sup>Greiner, T.; <sup>2</sup>Wagner, K-H.

<sup>1</sup>Association for Research and Support of Health Promoting Nutrition during Cancer Disease, Vienna, Austria

<sup>2</sup>Department of Nutritional Sciences, University of Vienna, Vienna, Austria

**Purpose:** Animal fat and protein have been shown to influence tumor development and progression. The aim of this pilot-study was to investigate tumor outcome in a cohort of cancer patients with a wide range in intake of animal derived foods and to find a first estimate of the effect size.

**Methods:** In this prospective pilot-cohort study cancer patients were recruited online. They choose their dietary pattern for the duration of 6 months and had to complete three questionnaires (0, 3 and 6 months) about cancer history, treatment, cancer- and therapy related symptoms, comorbidities and diet.

**Results:** Out of 99 completers, 39 followed an omnivore, 26 a semivegetarian or vegetarian and 34 a semivegan or vegan diet. Mean intake of protein rich animal food ranged from 0.0 to 3.4 ± 2.2 servings/day. Vegan and semivegan patients had significantly more remissions compared to omnivores (33% versus 5%, p = 0.004) after 6 months. They also had less neuropathy and constipation. Meat, total meat (including processed meat), dairy and fish consumption correlated inversely with remissions, whereas vegetable intake was inversely related to cancer progression. None of the safety parameters (BMI, Karnofsky performance score, laboratory parameters) indicated any disadvantage for the vegetarian or vegan groups.

**Conclusions:** Reducing animal foods, especially animal proteins, was safe and improved tumor prognosis in a population of mixed cancer patients, who already lived healthy. The novel finding, that particular food groups are differentially linked to tumor outcome, may lead to more differentiated nutritional advice for cancer patients.

**Disclosure:** none declared

NR. 46

### Nutritional status of the spanish vegetarian population: Veggunn study

<sup>1</sup>Gallego, A.; <sup>1</sup>Zapatera, B.; <sup>2</sup>Sánchez, A.; <sup>1</sup>Vaquero, MP.

<sup>1</sup>Department of Metabolism and Nutrition; Institute of Food Science, Technology and Nutrition (ICTAN-CSIC), Madrid, Spain

<sup>2</sup>Zamdeh Laboratories, Madrid, Spain

**Purpose:** Vegetarian diets are increasingly becoming popular in Spain. appropriately planned vegetarian, including vegan, diets are healthful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases. There are no scientific data on the nutritional status of vegetarian/vegan Spanish adults or on the relationship between their lifestyle habits and analytical biomarkers of health. Here we present the methodology of an ambitious research project with the aim of knowing the nutritional status of vegetarians, including vegans, using biochemical, anthropometric, dietary and health status markers.

**Methods:** The study design is an observational assay with the following inclusion criteria: healthy adults (age  $\geq 18$  y), men and women. Exclusion criteria were: occasional meat or fish consumption, diagnosed digestive, renal, hematologic, endocrine or oncological diseases, eating disorders, pregnancy, lactation and menopause. A total of 106 volunteers participated in the study. Diet information and body composition data were collected. Determinations included standard haematological and biochemical markers related with iron metabolism, lipid levels (total-cholesterol, LDL-cholesterol, HDL-cholesterol, triglycerides), glucose, and vitamin B12. In addition, serum transferrin receptor, fatty acids (including n3 and n6), methylmalonic acid, and markers of bone remodelling were analysed. Results: Preliminary results indicated a predominance of vegetarian over vegan individuals. Most of the volunteers consumed vitamin B12 supplements. Concerning body composition, body mass index (BMI) was within the normal range.

**Conclusions:** This research constitutes a complete first approach to the Spanish vegetarian population nutritional status and will provide an appropriate basis for future studies and public health recommendations.

**Disclosure:** none declared

NR. 47

### **Diet-related health risks in germany: a comparison between tobacco products, alcoholic beverages, processed meat and illegal drugs**

*Gaugler, T.; Tefci-Korkmaz, D.*

University of Augsburg, Germany

**Purpose:** We aim to compare health impairments associated with the consumption of different foodstuffs and luxury foods.

**Methods:** Starting from a meta-analysis, disability-adjusted life years lost (DALYs) of tobacco, alcohol, processed meat and illegal drugs are calculate. Additionally, a primary-data analysis of consumption and turnover figures is carried out.

**Results:** With 3,001.5 DALYs/100,000 inhabitants, tobacco products are the most harmful luxury foods. The consumption of alcohol results in 1,451.9 DALYs. With 384.3 DALYs, processed meat is just ahead of illegal drugs associated with 360.9 DALYs. Based on a per-capita-consumption of 135.5l (alcohol) and 29.5kg (processed meat) and a turnover of 19.16 billion euros (alcohol) and 6.73 billion euros (processed meat) it results that, weighted by quantities, processed meat is related to a 22% higher DALYs-value than alcohol. In contrast, processed meat shows a 25% lower DALYs-value than alcohol, if weighted by turnover. Equally rating both approaches, we summarize that the consumption of processed meat – per consumed quantity and per turnover combined – is as risky for human health as the consumption of alcoholic beverages.

**Conclusions:** Tobacco and alcohol are highly taxed and subject to regulations such as audience-related advertising prohibitions. In contrast, processed meat is highly subsidized. Trade and consumption of illegal drugs are under penalty. Due to the specific health risks associated with different foodstuffs and luxury foods, it seems reasonable to apply our findings to further develop economic policy and regulatory measures.

**Disclosure:** none declared

NR. 48

### **Effect of ayurvedic versus conventional dietary intervention on gut microbiome of IBS patients**

*<sup>1</sup>Graef, FA.; <sup>2,3</sup>Schumann, D.; <sup>2</sup>Stapelfeldt, E.; <sup>2,3</sup>Steckhahn, N.; <sup>2,3</sup>Jeitler, M.; <sup>1</sup>Jacobson, K.; <sup>4</sup>Surette, M.; <sup>2,3</sup>Michalsen, A.; <sup>1</sup>Vallance, BA.; <sup>2,3</sup>Kessler, C.*

<sup>1</sup> Department of Pediatrics, Division of Gastroenterology, BC Children's Hospital Research Institute, University of British Columbia, Vancouver, Canada

<sup>2</sup> Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Institute of Social Medicine, Epidemiology and Health Economics, Berlin, Germany

<sup>3</sup> Immanuel Hospital Berlin, Department of Internal and Complementary Medicine, Berlin, Germany

<sup>4</sup> Department of Biochemistry and Biomedical Sciences, McMaster University, 1280 Main St. W, Hamilton, Canada

**Purpose:** Irritable Bowel Syndrome (IBS) is the most common functional gastrointestinal disorder. While the exact etiology remains unknown, multiple studies point towards a role for a dysbiotic gut microbiome in the onset and progression of IBS. Since changes in diet can induce profound alterations in the gut microbiome, dietary interventions have significant potential to correct this dysbiosis and reduce IBS symptoms.

**Methods:** IBS patients were randomized into two groups either (1) receiving either ayurvedic counseling or (2) conventional dietary advice. Stool was collected on the patient's first visit and 4 or 8 weeks after the first counseling. 16S rRNA sequencing and analysis was performed to characterize the gut microbial composition of the two groups before and after intervention.

**Results:** Changes in microbial diversity could be observed within and between treatment groups with respect to microbial richness, evenness (alpha-diversity) and beta-diversity.

**Conclusions:** Changes in dietary habits catalyzed by nutritional counseling of IBS patients lead to overt alterations in their gut microbiome. Future analysis will help determine if specific microbial species are associated with primary study outcomes such as the severity of gastrointestinal symptoms.

**Disclosure:** none declared

NR. 49

### **Ernährungsphysiologische Bewertung von konventionell und ökologisch erzeugten vegetarischen und veganen Fleisch- und Wurstaternen**

*Huber, J.; Keller, M.*

Institut für alternative und nachhaltige Ernährung, Biebertal/Gießen, Germany

**Purpose:** Ernährungsphysiologische Bewertung von konventionellen (konv) und biologischen (bio) vegetarischen und veganen Fleischalternativen.

**Methods:** Es wurden 80 Fleischalternativprodukte hinsichtlich des Energie- und Proteingehalts, der Proteinqualität (Biologische Wertigkeit und PDCAAS), des Gehalts an Fett, gesättigten Fettsäuren (SFA), Zucker und Salz (multiple Ampel der Food Standards Agency) sowie der Verwendung von Zusatzstoffen, Aromen und anderen geschmackgebenden Zutaten untersucht. Außerdem erfolgte eine vergleichende Bewertung von fleischhaltigen «Originalprodukten».

**Results:** Die meisten Fleischalternativen wiesen eine hohe Proteinqualität sowie einen hohen Proteingehalt auf. Die Alternativen hatten im Durchschnitt eine mittlere bis hohe Energiedichte, die etwas niedriger lag als bei vergleichbaren Fleischprodukten. Auch der mittlere Fettgehalt war etwas niedriger (gelb, Fleischprodukte: rot). Der SFA-Gehalt der Fleischalternativen wurde meist grün oder gelb bewertet, bei den Fleischprodukten überwiegend rot. Sowohl Fleischalternativen als auch Fleischprodukte wiesen hohe bis sehr hohe Salzgehalte auf (rot), während der Zuckergehalt in beiden Gruppen vernachlässigbar war (grün). Bio-Fleischalternativen enthielten, wie die Fleischprodukte, im Durchschnitt lediglich einen

Zusatzstoff pro Produkt (konv. Fleischalternativen 1,9 [vn]; 3,5 [vg]). Bei vielen Bewertungsparametern gab es große Schwankungsbreiten.

**Conclusions:** Fleischalternativen stellen aufgrund ihrer Makronährstoffzusammensetzung eine ernährungsphysiologisch günstige Alternative zu Fleisch und Wurst dar. Dabei sollten Produkte mit niedrigem Salzgehalt sowie, zur Vermeidung von Zusatzstoffen und Aromen, Bio-Produkte bevorzugt werden.

Disclosure: none declared

NR. 50

### Inadequate pricing of animal-based foods and its impact on consumer behavior: an approach on internalizing follow-up costs from nitrogen and greenhouse-gases emitted by german agriculture

Michalke, A.; Gaugler, T.

University of Augsburg, Germany

**Purpose:** We determine the quantity and economic consequences of ecological impacts resulting from agricultural animal production. Demand-side effects, which would result from a more truthful pricing of animal-based products, are also examined.

**Methods:** First, primary data for nitrogen and greenhouse-gas emissions resulting from agriculture is collected to subsequently determine the animal-based emission shares. Follow-up costs resulting from these emissions are quantified by additionally including secondary data. These damage costs, particularly arising for human health, ecosystems and the climate, are ultimately set in ratio with current market prices.

**Results:** We find annual follow-up costs from nitrogen amounting to approximately 10 billion Euros for animal produce. By internalizing these previously hidden costs into the market prize, consumers would face a prize-increase of 9.5%. Greenhouse-gas costs amount to approximately 4.95 billion Euros, equivalent to a price-increase of 4.7%. Since these costs are not disjointed completely, a simple summation is insufficient. However, through reasonably combining both effects, a price-increase of 10 to 12% seems rational. With a price elasticity of demand of nearly -1, a polluter-oriented internalization would therefore reduce customers' demand for animal produce by about 10%.

**Conclusions:** By internalizing yet unconsidered follow-up costs from agricultural nitrogen and greenhouse-gas emissions, especially prices for foods of animal origin would increase. The resulting decrease of demand for this food category of about 10% matches a price-driven modification of the dietary behavior towards a sensible (ecologically and health wise) more plant-based diet.

Disclosure: none declared

NR. 51

### Vegetarian nutrition for mothers and children: guidelines for health care professionals

<sup>1</sup>Goggi, S.; <sup>2</sup>Baroni, L.

<sup>1</sup>Dietetic and Nutrition Unit, Ospedale Luigi Sacco, Milano, Italy

<sup>2</sup>Primary Care Unit, Northern District, ULSS <sup>2</sup> Marca Trevigiana, Treviso, Italy

**Purpose:** A growing number of people in Europe are following vegetarian diets. Although being proven to be an adequate and healthful option also during pregnancy, lactation, infancy and childhood, health care practitioners may discourage plant-based diets during these stages of life because they are not prepared to deliver correct dietary advice.

In order to help physicians and dietitians to best advice vegetarian subjects, the Italian Scientific Society of Vegetarian Nutrition (SSNV) elaborated detailed nutritional guidelines.

SSNV also grouped all health professionals in Italy expert on vegetarian nutrition under the VegFamilyNetwork, to which vegetarian families can refer for advice.

**Methods:** Nutritional guidelines were elaborated after reviewing the scientific literature on the subject.

All members of the VegFamilyNetwork are periodically invited to discuss and implement these guidelines.

**Results:** All members of the VegFamilyNetwork are skilled at providing knowledge to patients about correct dietary planning and reassuring them about the total safeness of plant-based diets since the earliest stages of human development.

**Conclusions:** The guidelines elaborated by SSNV for members of the VegFamilyNetwork are an easy tool also for other practitioners in Europe who wish to improve their knowledge on vegetarian diets.

Vegetarian families in Italy can rely on health care professionals belonging to the VegFamilyNetwork for dietary advice.

Disclosure: none declared

NR. 52

### Plant foods, meat, and the risk of diabetes in the KORA FF4 study

<sup>1</sup>Jones, T.A.; <sup>2</sup>Riedl, A.; <sup>3</sup>The KORA study group

<sup>1</sup>Research Unit Clinical Epidemiology at the Helmholtz Zentrum München, Neuherberg, Germany

<sup>2</sup>Research Unit Clinical Epidemiology at the Helmholtz Zentrum München, Neuherberg, Germany

<sup>3</sup>Linseisen, J. Chair of Epidemiology at the Ludwig-Maximilians-Universität München at UNIKA-T Augsburg, Augsburg, Germany

**Purpose:** This study aims to further elucidate the relationship between plant foods, meat, and the risk of diabetes.

**Methods:** 1,542 participants of the population-based Cooperative Health Research in the Region of Augsburg (KORA) FF4 study (2013/2014) were included in this analysis. Dietary intake was derived using a method combining the information from a food frequency questionnaire and repeated 24-hour food lists. Glucose tolerance status was assessed via oral glucose tolerance test or physician-confirmed diagnosis and classified according to the 2003 American Diabetes Association criteria. Crude and fully adjusted multinomial linear regression models were performed to examine the association between plant foods, meat, and the risk of prediabetes, undetected diabetes mellitus (UDM) and prevalent diabetes in this population.

**Results:** After full adjustment, consumption of fruit (OR: 0.80, 95% CI: 0.65–0.99; OR: 0.85, 95% CI: 0.73–0.99), total meat (OR: 2.22, 95% CI: 1.37–3.58; OR: 1.71, 95% CI: 1.15–2.54) and processed meat (OR: 3.18, 95% CI: 1.76–5.74; OR: 2.33, 95% CI: 1.39–3.91) were significantly associated with the risk of UDM and prevalent diabetes. Total fiber, insoluble fiber and vegetable intake were significantly associated with a decreased risk of diabetes in the crude analysis, but were no longer significant after full adjustment.

**Conclusions:** In the KORA FF4 study population, habitual intake of fruit is associated with a decreased risk of diabetes, while total and processed meat are associated with increased risk. We believe our findings support the recommendation of a plant-based diet for primary prevention of the derangement of glucose homeostasis.

Disclosure: none declared

NR. 53

### Medicine from the kitchen: the apple

Kerckhoff, A.

Carstens-Stiftung: Natur und Medizin, Essen

**Purpose:** Over decades women passed on sanitary knowledge orally from one generation to another. Living at home and being responsible for the health of the family members, they developed an enormous empirical knowledge about the use of domestic resources for health promotion, self-healing strategies and healing purposes. Here, home-grown fruit and vegetables constituted an important ingredient. Fruit and vegetables, as

well as herbs and spices, were used both internally and externally in form of various, partly very unusual applications. This knowledge is at risk to be lost. It should be documented. On the other hand traditional knowledge has to be evaluated and passed on regarding the possibilities but also limits of selfhelp.

**Method:** documentation of folkrecipes, clinical data, scientific data about active ingredients, evaluation of internal and external applications in folkmedicine.

**Results:** Apples are widespread fruit and used in many folkremedies. Scientific data shows an association between apple/ apple products and reduced risk of major diseases as well as positive effects in therapy. E.g. dried apples lower cholesterol level significantly, apple juice has a positive effect on diarrhoe of children etc. In folkmedicine the apple is used for fasting cures, detox-days, liver diet, diarrhoe, facial masks etc. Apple cidre vinegar has a special value in folkmedicine.

**Conclusions:** Apples are important resources for „medicine from the kitchen“. Knowledge about quality, storage, exact application, active ingredients, side-effects, interactions etc. is necessary to be passed on in educational programs.

**Disclosure:** none declared

NR. 54

### **Will goal-setting with a weekly reminder increase uptake of plant-based cooking and/or plant-based dinners on a weekly basis?**

*Jensen, K. N.; Santos, Q.; Perez-Cueto, F.J.A.*

Food Science at the University of Copenhagen, Copenhagen, Denmark

**Purpose:** Investigation of the influence of individual goal setting with a reminder and self-monitoring on the frequency of plant-based dinners and plant-based cooking on consumers transitioning towards a more plant-based diet.

**Methods:** Longitudinal cohort study with repeated measures. Forty-seven participants participated in the observational cohort study comparing two groups (control n = 23, and intervention n = 24). The groups were observed by self-monitoring questionnaires with weekly quantitative questions during a period of 4 weeks. Data was collected through 3 different questionnaires distributed by email; inclusion-, weekly – and final questionnaire, with 5 measures in total (the weekly questionnaires were distributed 3 times) and analysed by using SPSS version 24.

**Results:** Majority of the participants were women (55,3%) with a superior education (76,6%). Mean age were 29,5y. At baseline the average plant-based cooking times were 2,7 a week and increased to 3,2 in the end of the intervention. Moderate changes, or moderate goals were more likely to be achieved (3.3 meals/week), as opposed to implementing significant or extreme dietary changes (more than 5 meals/week).

**Conclusions:** An adequate goal is one that is both realistic and challenging, then the chance for reaching, and maintaining the behaviour change, is highest. Furthermore, self-monitoring on a weekly basis, during four weeks, has the ability to influence one's attitude towards plant-based eating significantly. This positive change is believed to enhance motivation and support maintenance of the behaviour. During the intervention period, significant improved cooking skills were reported, alongside with easier plant-based meal choices.

**Disclosure:** none declared

NR. 55

### **Cruciferous vegetables and the thyroid gland: friends or foes?**

*Kob, M.*

Bolzano Regional Hospital, Bolzano, Italy

**Purpose:** Cruciferous (brassica) vegetables are very common foods, especially in plant-based diets. They contain many healthy nutrients, including phytochemicals with anticarcinogenic, antioxidative and antiinflammatory activity. However, they also contain goitrogens such as progoitrin and glucosinolates, which may interfere with thyroid hormone production or utilization. The aim of this evidence-based literature review is to provide information regarding the influence of cruciferous vegetables on thyroid function in humans.

**Methods:** A review of articles relating cruciferous vegetables with thyroid function in humans was performed.

**Results:** Four observational studies, one case report, one article investigating the goitrogens content of brassica vegetables and three experimental studies were found. Most of the brassica vegetables have low goitrin contents, with the exception of collards, Brussel sprouts and some Russian kale species. The consumption of 150g of cooked Brussel sprouts/die for four weeks did not show any negative effect on thyroid parameters. The only studies with negative outcomes were 1) a case report where 1–1.5kg of raw Bok Choy was consumed daily over several months and 2) observational studies from the seventies, where children consumed large amounts of milk by cows fed with high glucosinolate-containing food crops.

**Conclusions:** There is little reliable evidence that the consumption of normal dietary levels of cruciferous vegetables affects thyroid function. Furthermore, the goitrogen-concentration can be decreased by cooking by boiling, which causes leaching of glucosinolates into water and inactivation of the enzyme myrosinase.

**Disclosure:** none declared

NR. 56

### **Nutrient recommendations for vegans – what should we recommend?**

*Koeder, C.*

Department of Nutritional Sciences, University of Applied Sciences, Münster, Germany

**Purpose:** Veganism is not a “thing of the West”. Nor is it just a trend in affluent, industrialized countries. Veganism is gaining in popularity globally, in almost every country, naturally including many low and middle-income countries (LMIC), in which certain foods, fortified foods, or micronutrient supplements are less easily available. In addition, in many LMIC teenage pregnancies are common, increasing the risk of grave consequences if severe nutrient deficiencies occur. Nutrient recommendations for vegans are needed.

**Methods:** Using the latest peer-reviewed biomedical literature a literature research was conducted on the nutrients most relevant to vegan nutrition: vitamin B12, calcium, vitamin D, iodine, omega-3 fatty acids, iron, zinc, selenium, vitamin A and protein.

**Results:** Even though most of the research available to date on vegans’ health is observational in nature the currently available data together with anecdotal evidence from vegan nutritional scientists’ experience allows the formulation of preliminary nutrient recommendations for vegans. Recommendations for vegans were formulated with attention to some regional differences globally. Vitamin B12 is of utmost priority in vegan nutrition.

**Conclusions:** Formulating science-based vegan nutrient recommendations is possible, although much more research on vegan health is necessary. Attention must be paid to regional differences. The issue of vitamin B12 must be addressed globally in the vegan community, with a priority focus on vegan women at risk of pregnancy and vegan children.

**Disclosure:** none declared

NR. 57

### **Low-Fiber, normocaloric and normoproteic plant-based (vegan) diets: are they feasible?**

*Kob, M.; Ferrari, C.*

Division of Clinical Nutrition, Bolzano Regional Hospital, Bolzano, Italy

**Purpose:** A plant-based, vegan diet is usually characterized by a desired high fiber content. However, some medical conditions (e.g. acute diarrhea, chemotherapy, abdominal radiotherapy, acute phases of inflammatory bowel disease) requires an at least temporary reduction of dietary fibers. The aim of this study is to create examples of balanced, normocaloric, normoproteic plant-based meal plans with a fiber content <15 g/d.

**Methods:** We tried to create examples of a 1800 kcal, 70–75g protein meal plan (for women weighting 60–65kg) and a 2400 kcal, 85–90g protein meal plan (for men weighting 75–80kg) with vegan food ingredients only. Nutritional databases (CREA – Italy, Sauci-Fachmann-Kraut – Germany) and in some cases nutritional labels from branded food products were used. Meal plans were subdivided in breakfast, lunch, dinner and 3 snacks.

**Results:** A 1800 kcal and a 2400 kcal meal plan example were created. Five to six portions of low-fiber vegetables and fruits were included. Complementary protein sources from legumes (tofu, tempeh, soy products) and cereals (noodles, bread, rice, seitan) were used to enhance the biological protein value. Linseed oil and Chia seeds were used as source for alpha-linolenic acid. All meal plans contain <15 grams fiber.

**Conclusions:** Plant-based, balanced low-fiber diets are feasible and should be considered in medical conditions that require temporary reduction of dietary fiber.

**Disclosure:** none declared

NR. 58

### **Silent spring – consequences of pesticide application for nature products like honey**

*Kratz, W.*

Institute of Biology at the Free Universität, Berlin, Germany

Not only in Germany, the windscreens of cars remain clean: There is widespread concern about the worldwide loss of biodiversity of insects. Concerning their role in pollination, the decline in the number of bees is particularly worrying. Their abundance and biomass loss, is a major threat to the nutritional guarantee and stability of our agriculture- ecosystems. Due to the practices of intensive conventional agriculture, pollinators such as bees and bumblebees are increasingly exposed to insect killers, such as pesticides, which are ultimately found in pollen and honey.

The ecotoxicologist Adjunct-Professor Dr. Werner Kratz, Institute of Biology, Free Universität Berlin, presents current data on insect losses, mechanisms of action of pesticides in honey bees and honey and pollen contamination with pesticides. Recommendations for improving the situation for bees and for overcoming food contamination are given also in the presentation.

**Disclosure:** none declared

NR. 59

### **Effects of a curly kale extract on the antioxidant status and collagen/elastin index of the skin in vivo**

<sup>1</sup>Lohan, SB.; <sup>1</sup>Friedrich, A.; <sup>1</sup>Nowbary, CK.; <sup>1</sup>Darvin, ME.; <sup>1</sup>Schanzer, S.; <sup>2</sup>Vollert, H.; <sup>1</sup>Lademann, J.; <sup>1</sup>Meinke, MC.

<sup>1</sup>Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt- Universität zu Berlin, and Berlin Institute of Health, Dermatology, Venerology and Allergology, CCP, Berlin, Germany

<sup>2</sup>BioActive Food, Bad Segeberg, Germany

**Purpose:** A balanced diet and a healthy lifestyle lower oxidative stress. Numerous studies showed that a supplementation with a single Antioxidant (AO) in a high-dose shows only limited or even undesired effects.

Recent studies demonstrated that a combination of various AOs in a low dose have a positive effect on the AO-system.

Carotenoids are main components of the exogenous AO-system. To investigate their effect on the AO-status of the skin, 2 independent double-blind placebo controlled in vivo-studies were performed.

**Methods:** Healthy volunteers were supplemented with a natural curly kale extract at physiological concentration. In vivo electron paramagnetic resonance spectroscopy was used to determine the radical scavenging capacity of the skin. The cutaneous carotenoids were measured using resonance Raman spectroscopy, the collagen/elastin content was identified by two-photon tomography.

**Results:** A successive improvement of the entire AO network after 8 weeks of supplementation was demonstrated: A significant reduction in the radical formation after moderate stress induction by irradiation was shown, in comparison to a placebo group. Furthermore, a significant increase in the bioavailability of cutaneous carotenoids was indicated. In a second study, the intake of the same extract was extended to 10 months, showing significant increases in the concentration of the skin carotenoids and the collagen/elastin index of the dermis compared to the baseline measurements.

**Conclusions:** A supplementation with a mixture of several low-dose AOs including carotenoids at physiological concentration significantly improved the AO capacity of the skin, resulting in a better radical defense, thus counteracting an age-related collagen I degradation in the dermis in vivo.

**Disclosure:** none declared

NR. 60

### **The effects of green tea beverages on the radical scavenging activity in human skin in vivo**

*Megow, I.; Darvin, M.E.; Meinke, M.C.; Lademann, J.*

Department of Dermatology, Venerology and Allergology at the Charité – Universitätsmedizin Berlin, Germany

**Purpose:** Skin cancer is the most common type of malignancy, and its worldwide incidence is increasing steadily. A major pathogenetic mechanism of skin cancer development is oxidative stress deriving from excessive radical formation. To prevent oxidative stress, the skin relies on the uptake of antioxidant compounds from plants. Numerous studies have investigated the antioxidant effects of green tea and its constituents in vitro, but so far the radical scavenging properties of green tea have not been confirmed in vivo in human skin.

**Methods:** In a randomized controlled trial with 37 volunteers, the cutaneous radical scavenging effects of green tea were investigated in vivo with electron paramagnetic resonance (EPR) spectroscopy. Participants were randomized to drink 3 cups of either “Yabukita” green tea, “Benifuuki” green tea, or water per day, with EPR measurements performed at baseline and after 2 weeks.

**Results:** Compared to the control group, both “Yabukita” and “Benifuuki” tea led to a significant increase in the radical scavenging activity of the skin of 28% and 29%, respectively. Despite a previously suggested higher bioavailability of “Benifuuki” green tea, no significant difference between the green tea groups was found.

**Conclusions:** In this pilot study we could show that the radical scavenging capacity of the skin is significantly increased after the intake of green tea beverages. Therefore, green tea may be effective in providing protection against oxidative stress in the skin.

**Disclosure:** none declared

NR. 61

## Healthy heart with quotidian foods; persian medicine perspective

<sup>1</sup>Pasalar, M.; <sup>1</sup>Mosaffa-Jahromi, M.; <sup>2</sup>Mosaffa, M.; <sup>1</sup>Tavakoli, A.

<sup>1</sup>Research Center for Traditional Medicine and History of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

<sup>2</sup>Jahrom University of Medical Sciences, Jahrom, Iran

**Purpose:** The aim of this study was to review simple ordinary foods which are advised in Persian medicine (PM) to achieve a healthy heart.

**Methods:** In a review study, we assessed main PM textbooks including Canon of Medicine (Avicenna), al-Hawi (Rhazes), Zakhire Khwarazmshahi (Hakim Jorjani) with keywords such as food, heart, nutrient, fruit and vegetable. All data gathered and assessed regarding new findings in current cardiology field.

**Results:** There is a list of natural and bioactive foods advised for healthy heart in medieval PM textbooks. Based on PM principles, a good digestion would result in a proper humor (Khilt) and a normal temperament (Mizadj). The main route to attain this point is high-quality fuel – natural foods including fruits, vegetable and so on.

PM scholars have introduced some suitable quotidian foods which are necessary to reinforce the heart. Saffron (*Crocus sativus*), lemon balm (*Melissa officinalis*), cinnamon (*Zelanicum cinnamomum*), cardamom (*Elettaria cardamomum*), apple (*Malus domestica*), cloves (*Syzygium aromaticum*), borage (*Borago officinalis*) and rose (*Rosa damascena*) are among simple ones and there are some special recipes of mixed intricate foods like Jollab.

The cardio-tonic effects of aforementioned natural substances have been shown in recent experimental or clinical studies.

**Conclusions:** Consumption of bioactive, natural and phytochemical foods could promote health condition especially for cardiac problems. PM, as a complementary method of healing, has the potential to be evaluated through precise trials for healthy heart.

**Disclosure:** none declared

NR. 62

## Plant-based eating from the consumer perspective

Perez-Cueto, F.J.A.

Department of Food Science, University of Copenhagen, Denmark

**Objectives:** To highlight the opportunities and obstacles towards adoption of a plant-based diet from the consumer perspective. To provide insights on possible consumer oriented interventions and innovation towards plant-based eating.

**Methods:** Synthesis of systematic reviews data and recent empirical consumer studies among EU young adults.

**Results:** Reviews show that most consumers choose plant-based diets for health reasons, both physical and mental, and for a good quality of life. Environmental concerns also facilitate plant-based food choices. Perceived common barriers towards plant-based food consumption relate to taste preferences, lack of family/partner support, but also practical issues like lack of cooking skills, fear of cooking or unavailability of plant-based foods. Consumer survey data showed that in BE, DE, DK and NL added animal welfare as reason to adopt plant-based diets and underscored the role of the partner in the process. In DK, where meat is linked to traditional eating, attitudes and objective knowledge towards plant-based diets constitute an arena of intervention, e.g. the beliefs that plant-based protein is insufficient or unsatiating.

**Conclusions:** To facilitate plant-based intake at consumer level current barriers should be overcome. Interventions could focus on awareness and objective knowledge about healthiness and sustainability of a plant-based diet. Additionally, interventions addressing cooking skills and taste experience would facilitate adoption of plant-based diets.

**Disclosure:** none declared

NR. 63

## The effectiveness of nudging towards a plant-based diet, a systematic review

Nielsen, C.W.; Weidema, I.H.; Kraus, H.; Ong, V.C.; Winther, C., Perez-Cueto, F.J.A.

Faculty of Science, Department of Food Science, University of Copenhagen, Denmark

**Purpose:** To assess existing evidence on how interventions of nudging can shift people towards a plant-based diet.

**Methods:** A systematic literature search of papers published between 2014 and 2017 was performed in December 2017 using PubMed, Scopus, and Web of Science. The following search strategy was used: plant-based OR vegetarian OR vegan OR semi-vegetarian OR pro-vegetarian AND nudging OR choice architecture OR behaviour change OR behaviour intervention. Due to heterogeneous outcome measures a meta-analysis was not possible so results are presented in narrative style.

**Results:** In total 425 articles were found of which 8 met the inclusion criteria. Six studies were rated as having good quality. All papers, except one, suggest that nudging in general exerts a positive effect on the consumption of foods of plant-based origin. Nudging by providing a default option seems to be the most promising nudge for promotion of plant-based consumption in foodservice operations.

**Conclusions:** Nudging seems to be effective in promoting a plant-based diet by facilitating healthier choices. Interventions using default options (e.g. pre-weighed portions, meat free option, etc.) appear to be particularly effective. However, future studies should provide the actual effect sizes of their interventions and the long term effects at consumer level.

**Disclosure:** none declared

NR. 64

## Evaluating the impact of a nutrition awareness program for expectant mothers upon birth weight of the new born

<sup>1</sup>Rastogi, S.; <sup>2</sup>Rastogi, R.; <sup>3</sup>Rastogi, D.; <sup>4</sup>Rastogi, R.; <sup>5</sup>Singh, G.; <sup>6</sup>Chiappelli, F.

<sup>1</sup>Department of Kaya Chikitsa, State Ayurvedic College and Hospital, Lucknow, India

<sup>2</sup>Department of Obstetrics, Vatsala Hospital, Lucknow, India

<sup>3</sup>Indulgence Food (Pvt.) Ltd, Nagpur, India

<sup>4</sup>Central Council for Research in Yoga and Naturopathy, New Delhi, India

<sup>5</sup>Department of Community Medicine, Banaras Hindu University, Varanasi, India

<sup>6</sup>UCLA School of Dentistry, Division of Oral Biology and Medicine and Associated Clinical Specialties, Los Angeles, CA, USA

**Purpose:** Poor maternal nutritional status and substandard antenatal care, which result in increased women's risk, low birth weight and stillbirth, afflict many countries with weak or emerging economies even today. Studies that address the effect of extending nutrition awareness among pregnant women to the net outcome of pregnancy remain scarce. We aimed to compare and contrast the effect of a pragmatic nutrition awareness program for expectant mothers (NAPEM) on birth weight of the newborn with a control group who received no such nutrition awareness activity. The effect of variables of mode of newborn delivery, associated complications at birth, and APGAR score of the newborn were also assessed.

**Methods:** A pragmatic intervention trial of an antenatal care (ANC) program that consisted in nutrition awareness was conducted involving 53 pregnant women. Awareness was given through one-to-one interview and through informational literature provided to the participants in the local language. A hospital registry for deliveries undertaken during the study period was screened for identification of variables. A control group of matched pregnant women (n = 53) was obtained from the same hospital registry from preceding years, when the nutrition awareness program was not executed.

**Results:** A statistically significant improvement in birth weight of the newborn was observed in the intervention group, where expectant mothers were made aware about desired nutrition during pregnancy. A reduced incidence of complications associated with pregnancy was also observed

in the intervention group. Providing awareness about nutritional requirements during pregnancy and suggesting the pragmatic ways to meet them was shown to be one possible effective measure to deal with pregnancy-related undernutrition.

**Conclusions:** We show the efficacy of the intervention for underprivileged regions of India marked by inadequate health care delivery and lower socio-economical standards. We discuss our findings in the context of available evidence-based guidelines.

**Disclosure:** none declared

NR. 65

### Milk and parkinson's disease: the galactose connection

Sarni, AR.; Baroni, L.

Primary Care Unit, Northern District, ULSS<sup>2</sup> Marca Trevigiana, Treviso, Italy

**Purpose:** Parkinson disease (PD) has long been associated with milk consumption. We tested the hypothesis that galactose could represent the missing link between milk consumption and (PD).

**Methods:** Multiple databases were searched up to 2017. All relevant studies were examined. Data from more than 300 studies were included in the review.

**Results:** PD is characterized by loss of dopaminergic neurons, excitotoxicity, imbalanced redox system, oxidative stress and neuroinflammation. Galactose is experimentally used to test mitochondrial toxins and to induce cell senescence, oxidative stress and apoptosis. Galactose proved to cause biochemical and neuropathological changes similar to those seen in PD patients. It upregulates the Tumor Protein 53 (p53) expression in a dose-dependent manner through the rheostatable GAL1 promoter. Overexpression of p53 is involved in neurodegenerative disorders, neuroinflammation, excitotoxicity, imbalanced redox system, decreased neurogenesis and increased neuronal death. According to evidence, galactose could damage CNS cells at doses exceeding 100 mg/kg. These concentrations are easily achieved, and exceeded, with the intake of as little 2 glasses of milk, which represents the main source of galactose in human diet.

**Conclusions:** Similarities between galactose toxicity and PD pathogenic features appear evident. We, therefore, propose that galactose could represent the missing link between milk consumption and an increased risk of PD although proof of this hypothesis requires further investigation.

**Disclosure:** none declared

NR. 66

### Validation of the efficacy of anti-tuberculosis activity in ananas comosus fruit and identification of potential lead molecule

Shefin, B.; Sreekumar, S.; Biju, C.K.

Saraswathy Thangavelu Centre, Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Puthenthope, Thiruvananthapuram, India - <sup>69</sup>338<sup>6</sup>

**Objectives:** To validate the efficacy of anti-tuberculosis activity in Ananas comosus fruit and identification of lead molecule through in silico approach.

**Methods:** To evaluate the anti-tuberculosis activity, Ag85C was selected as the target molecule, which is responsible for the maintaining the integrity of the cell wall through the synthesis of alpha, alpha-trehalose dimycolate. Ag85C protein has affinity with fibronectin, which facilitates the attachment of Mycobacterium tuberculosis to murine alveolar macrophages. The phytochemicals present in the fruit of Ananas comosus were used as ligand molecules for determining the anti-tuberculosis activity. The structure of the target protein was procured from Protein Data Bank and the structures of phytochemicals were procured from open access databases and screening process was performed using the tool, Autodock Vina 1.1.2. Further ADME toxicity studies of the top hit molecules were also performed via SwissADME server to select the potential lead molecule.

**Results:** Out of 176 molecules screened, 38 molecules showed <-6kcal/mol were identified as active molecules. These molecules were analysed based on molecular interactive forces such as hydrogen bond interactions, hydrophobic interactions and vander waal's interactions. ADME toxicity study was also performed to eliminate phytomolecules with undesired properties and campesterol was selected as the best lead molecule.

**Conclusions:** The overall results revealed that fruit of Ananas comosus contains phytochemicals which can significantly inhibit the bacterium. The results strongly substantiate the use of this plant against tuberculosis in Indian traditional medicine. However in vitro and in vivo studies of the lead molecules are essential for further development.

**Disclosure:** We hereby declare that the research paper entitled „Validation of efficacy of antituberculosis activity of Ananas comosus fruit and identification of potential lead molecule“ is the original work carried out by the authors at Biotechnology and Bioinformatics Centre of Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Thiruvananthapuram and no part of this research has not published or submitted for publication anywhere else. We confirm that all authors of the manuscript have no conflict of interest to declare.

NR. 67

### Development of the giessen vegan food pyramid

<sup>1</sup>Siebert, AK.; <sup>1</sup>Schaefer, C.; <sup>1</sup>Weder, S.; <sup>2</sup>Keller, M.

<sup>1</sup>Institute for Alternative and Sustainable Nutrition, Biebertal, Germany

<sup>2</sup>Fachhochschule des Mittelstands, Cologne, Germany

**Purpose:** In general, vegans have an adequate supply of most nutrients, but for several nutrients the intake can be critical (protein, cobalamin, calcium, iron, zinc, riboflavin, n3- fatty acids, vitamin d, iodine, selenium). For advising vegans, scientifically validated recommendations are needed. Therefore, a vegan food pyramid was developed.

**Methods:** A 14-day wholefood vegan menu plan was generated and analyzed with OptiDiet (GOE mbH). Furthermore, the menu plan was optimized to meet the German dietary reference intakes. To calculate the recommended macronutrient intake the mean value of the energy reference intake for women and men was used (25 to < 51 y, PAL 1.4; 2050 kcal). For micronutrients, the higher dietary reference intakes for either men or women were utilized. Finally, quantitative recommendations for each food group as well as the Vegan Food Pyramid were derived.

**Results:** Except for cobalamin and vitamin D, the dietary reference intakes were met. For an adequate intake of cobalamin, and vitamin D in winter, a daily supplementation is recommended. The calculated intakes of many nutrients (e. g. folate, vitamin C, vitamin E, magnesium, calcium, iron and essential fatty acids, fiber) exceeded the reference values.

**Conclusions:** The Giessen Vegan Food Pyramid is a new tool for advising healthy adult vegans to meet the German dietary reference intakes. In the future, the pyramid should be tested and validated in practice. In addition, separate vegan food pyramids for groups at risk (e. g. pregnant or breastfeeding women and children) should be developed.

**Disclosure:** none declared

NR. 68

### Facilitators and barriers of plant-based diets in traditional meat consuming societies

Steenvoorden, M.; Dos Santos, Q.; Perez-Cueto, F.J.A.

Department of Food Science at the University of Copenhagen, Frederiksberg, Denmark

**Purpose:** The aim of this study was to investigate how a plant-based diet could be encouraged in traditional meat consuming societies.

**Methods:** A check-all-that-apply questionnaire study was conducted via social media, inquiring about perceived barriers and facilitators for switching to a more plant-based diet. Cluster analysis and profiling identified two segments: meat-eaters and reduced meat-eaters. A chi-square test was used to find significant differences in the perceived barriers and facilitators between the two segments.

**Results:** A total of 487 individuals older than 18 years and living in Belgium, Denmark, Germany and the Netherlands completed the survey. There were 12 facilitators that were more important to reduced meat-eaters than meat-eaters, but none vice versa. Furthermore, the most frequently-mentioned facilitator for both segments was the reduction of the impact on the environment. Barriers that were more significant for meat-eaters were mainly knowledge-based, such as not knowing what to eat instead of meat. Barriers more significant for reduced meat-eaters focused on the availability of foods needed for a plant-based diet. Furthermore, the main perceived barrier for both segments was that the family or partner was not willing to switch to more plant-based diet.

**Conclusions:** Any campaign aiming to facilitate a switch to plant-based diets should take the important facilitators and barriers into account. Among meat-eaters, awareness for facilitators could be increased and the knowledge-based barriers should be addressed. For reduced meat-eaters, product availability issues should be targeted. Furthermore, plant-based diet campaigns should focus on the entire family.

**Disclosure:** none declared

NR. 69

### **Effectiveness of vegetarian diet in treatment of nonalcoholic fatty liver disease in persian and modern medicine**

*Tabatabaei, F.; Yousefi, M.; Pasalar, M.*

Research Centre for Traditional Medicine and History of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

**Purpose:** The aim of current study was to find the treatment of nonalcoholic fatty liver disease (NAFLD) in Persian medicine (PM) and compare it with existing literature.

**Methods:** PM references like “Tib-e-Akbari”, “Exir-e-Aazam” and “Kholasatol-Hekmat” were searched with the keyword “hepatic malady”. Then we looked for vegetarian diet and NAFLD in English databases including PubMed, web of science, Scopus, google scholar and cochrain library.

**Results:** NAFLD is characterized by fat deposition in hepatocytes showing a tight association with nutritional factors. In Modern medicine, treatment targets to lifestyle modification with a special focus on vegetarian diet. NAFLD has been mentioned in Persian medicine (PM) manuscripts as “Hepatic malady” with a unique prescription – vegetarian food and avoiding meat consumption. Comparing PM references and classic medicine research data, there is a fact that both referred to vegetarian diet as a solution for treating NAFLD.

**Conclusion:** Vegetarian diet, as an effective and useful treatment for NAFLD, could be evaluated through further large, rigorous high-quality designed trials to confirm the safety and efficacy.

**Keywords:** Vegetarian diet, Nonalcoholic fatty liver disease, Persian Medicine

**Disclosure:** none declared

NR. 70

### **Therapeutic effects of quince in traditional persian medicine**

*Tavakoli, A.; Tavakoli, F.; Miri, M.*

Research Center for Traditional Medicine and History of Medicine at the Shiraz University of Medical Sciences. Iran

**Purpose:** *Cydonia oblonga* M. commonly known as Quince is a medicinal plant of Rosaceae family cultivated in South Africa, Central Europe and Middle East. Iran supplies about 75% of the world production. Quince is basically a fragrant fruit that has nutritional and medicinal uses. The aim of this study is to introduce therapeutic effects of Quince in Traditional Persian Medicine (TPM).

**Methods:** TPM manuscripts like Canon were investigated for Quince and its benefits effects.

**Results:** In TPM, Quince called “Safarjal” is generally very useful for reinforcement of heart and nerves. Its fruit has been traditionally used as an astringent, diuretic, relieving stress and maintaining a calm mind,

antiemetic, anti-diarrheal, anti-inflammatory and ulcer healing agent in gastric and intestinal ulcers. In traditional recipes it is recommended that fleshy part of this fruit be seldom eaten raw but consumed in form of jam prepared with honey. Quince, when mixed with honey, can help treat colitis. Quince juice is helpful for stimulation of appetite, strengthens of liver, stomach and lower esophageal sphincter and prevention of reflux, Protection of fetus from abortion, in the treatment of cardiovascular diseases and elimination of bad breath (halitosis). Quince seeds would be useful to treat cough, hoarseness of the throat and burning sensation in mouth if soaked in water until its mucilage is extracted and then drunk.

**Conclusions:** It is imperative that clinical trial researches be performed to prove therapeutic effects of Quince.

**Disclosure:** none declared

NR. 71

### **Vegetarians and vegans have a lower risk of ischaemic heart disease but a higher risk of total stroke: results from the prospective EPIC-Oxford study**

*Tong, T.Y.N.; Appleby, P.N.; Bradbury, K.E.; Perez-Cornago, A.; Travis, R.C.; Clarke, R.; Key, T.J.*

Nuffield Department of Population Health, University of Oxford, UK

**Purpose:** Vegetarianism has become more common, but its relevance for cardiovascular diseases subtypes is uncertain. We examined the associations of vegetarianism with ischaemic heart disease (IHD) and stroke in a cohort study in the United Kingdom.

**Methods:** In EPIC-Oxford, dietary information and blood samples were collected at baseline (1993–1999), and participants were categorised into four diet groups: regular meat eaters:  $\geq 50$ g of meat per day [ $n = 16,332$ ], low meat eaters:  $< 50$ g of meat per day [ $n = 8,096$ ], fish eaters [ $n = 7,506$ ], and vegetarians (including vegans) [ $n = 16,254$ ]. Multivariable-adjusted Cox regression was used to estimate the risk of IHD and stroke (including ischaemic and haemorrhagic types) identified through record linkage prior to mid-2016. Blood lipid assays were performed in a subset of 3,662 participants, following standardised methods.

**Results:** Compared with regular meat eaters, low meat eaters, fish eaters, and vegetarians had 12%, 14%, and 24% lower risks of IHD respectively ( $p$  heterogeneity  $< 0.0001$ ). In contrast, for total stroke, the three low or non-meat diet groups had about 22%, 28% and 29% higher risks respectively ( $p$  heterogeneity = 0.01). Overall, compared with regular meat eaters, vegetarians had a 14% lower risk of composite IHD or stroke (0.86, 0.78–0.95). Vegetarians also had 0.54 mmol/L lower serum non-high density lipoprotein cholesterol levels than regular meat eaters.

**Conclusions:** Low meat eaters or non-meat eaters had lower risks of IHD but higher risks of stroke, but overall vegetarians had lower risk of a composite of IHD or stroke events.

**Disclosure:** none declared

NR. 72

### **Association between a vegan diet and stool pH**

*Trefflich, I.; Menzel, J.; Lampen, A.; Abraham, K.; Weikert, C.*

Federal Institute of Risk Assessment, Berlin, Germany

**Purpose:** It is assumed, that diet, e.g. veganism, influences the composition of the microbiota and other parameters in stool, which could be attributed to an active role in human health status. Our aim is to report and discuss the methods on human fecal sample processing. Furthermore we show first results on the stool pH. Due to an expected higher intake of fiber and a lower intake of proteins in vegans compared to omnivores pH differences in stool samples can be assumed.

**Methods:** 36 vegan and 36 omnivore subjects were recruited for this cross-sectional study. Dietary intake was assessed with a self-administered food frequency questionnaire. Participants delivered a complete stool sample, which were processed immediately (weighing, homogenization, split into aliquots) for analysis of microbiota composition, fatty acids and

bile acids. The pH value was measured with a pH electrode in the native sample. All aliquots were stored at -80 °C for further analysis.

**Results:** Vegans reported a considerably higher intake of fiber and lower intake of protein. We observed significant differences in mean pH ( $\pm$  SD) between vegans ( $6.40 \pm 0.48$ ) and omnivores ( $6.73 \pm 0.45$ ). However, after adjustment of fiber and protein intake we could not further observe significant pH differences between vegans compared to omnivores.

**Conclusions:** Our first results noticed a lower mean pH value in vegans than in omnivores. Further the diminished pH differences between vegans and omnivores after adjustment of protein and fiber may suggest a dependent relation of protein and fiber intake with pH in stool.

**Disclosure:** none declared

NR. 73

### **Plant-based menu for hospitalized patients at nutritional risk, a sensory feasibility study**

*Beermann, T.; Holst, M.; Rasmussen, H.H.*

Centre for Nutrition and Bowel Diseases, Aalborg University Hospital, Aalborg, Denmark

**Purpose:** Danish national recommendations for hospitalized patients at nutritional risk (NRS-2002) emphasizes animal-based protein and energy dense food. However, more patients are now asking for plant-based alternatives. This study aimed to investigate if plant-based alternatives could be accepted also amongst omnivorous patients and thereby to higher extent be integrated in the regular hospital diet.

**Methods:** 112 hospitalized, omnivorous patients (61 male/51 female, average 60.8 years (range 18–94)) at departments of Infectious Medicine and department for Heart and Lung surgery at Aalborg University Hospital in Denmark gave informed consent to participate in a sensory acceptance test with plant-based alternatives to the traditional animal-based food. A total of 48 different recipes were tested. Patients were given six small portions (25 g) at a time and were asked to rank each according to taste (hedonic 9-point scale). In addition, they were asked if they would prefer the hospital food to a higher extent were based on plant-based ingredients.

**Results:** 55 % of the patients would most likely/definitely prefer to have hospital food that to a higher extent were based on plant-based ingredients. 45 (94 %) samples had a median point  $\geq 6$  for taste acceptance. Highest ranking (average  $\geq 7$ ) was given for desserts, drinks, bread, soup, vegan omelets and “fish”-filet. Lowest ranking for taste (median 4) was given for two “meaty” products.

**Conclusions:** Plant-based alternatives to traditional animal-based hospital diet are widely accepted for taste amongst Danish omnivorous hospitalized patients and could be incorporated as an alternative in the present hospital diet.

**Disclosure:** none declared

NR. 74

### **Vegan diet – need for risk communication**

*Groeneveld, I.; Lohmann, M.; Böhl, G.-F.*

German Federal Institute for risk assessment (BfR), Berlin, Germany

**Purpose:** Studies investigating plant-based diets have yielded health benefits such as reduced risk for cardiovascular diseases, lower cholesterol and blood pressure as well as lower risk for diabetes and special forms of cancer. On the other hand, severe health problems might occur due to a lack of important nutrients such as cobalamin, vitamin D or riboflavin. These deficits have to be counterbalanced by supplements or fortified food. Our objective was to analyze vegans risk perception and information seeking related to a plant-based diet in order to develop adequate risk communication strategies.

**Methods:** We conducted 5 focus groups with 42 vegan living men and women. Main topics to be discussed were information seeking, risk awareness and perception, supplementation of nutrients, trust in physicians and motivation for a vegan diet.

**Results:** The majority of participants are well informed about potential risks regarding a plant-based diet and the need for supplementing specific nutrients such as cobalamin. They mainly use websites and books to get information about a vegan diet. Many participants are unsatisfied with the support of physicians who are described as not too well informed about a vegan diet and its implications on one’s health status.

**Conclusions:** The results show that many vegans are well informed about nutrition, diets and healthy food. But still there seems to be a need for further information especially relating to children, pregnant and breast-feeding women. Risk communication therefore should focus on special groups, general information about supplements as well as reliable studies on risk assessment of a vegan diet.

**Disclosure:** none declared

---

## **Late-Breaking Abstracts**

---

NR. 75

### **Oh Lord, let the vitamins from Broccoli go into the sausage – concepts, successes and failures in the promotion of plant-based diets**

*Kroke, A.*

Hochschule Fulda, Fulda, Germany

A high consumption of vegetables and fruits is one of the most relevant dietary recommendations. Compared to the amounts recommended the actual intake in omnivorous populations of high- and middle income countries is rather low. The promotion of a diet high in vegetables and fruits and, alongside the emphasis on their vitamin content, has resulted in various “reactions”. The pious prayer alluded to in the title of this presentation has become reality already. Various non plant-based food items have been enriched with vitamins from plants. And the supplement industry has profited as well. The question, however, remains, in how far the actual intake of vegetables and fruits could be changed. In addition to dietary recommendations, as provided by the German Nutrition Society, numerous efforts have been undertaken to increase vegetable and fruit intake in the population, either via behavioural or setting modifying interventions. Applied methods include nutrition education, price modification, (free of charge) provision, nudging and multi-component interventions. These interventions were implemented in various settings, e.g. pre-school, schools, universities, work sites. Some single interventions have been analyzed in detail regarding their effects, such as the 5-a-Day campaign or the school fruit programme. In addition, numerous reviews, systematic reviews and meta-analyses have addressed issues of effectiveness of such interventions. This presentation will focus on selected results of studies on intervention effectiveness, will report about successes and failures and will highlight strength and weaknesses of these interventions. Finally, politically motivated approaches, such as the “Veggie day” proposed by the German Green Party (Die Grünen) will be addressed.

**Disclosure:** none declared

NR. 76

### **Die Lupine – Anbau, Qualitätssicherung und Vermarktung eines Eiweiss-Shootingstars / Lupine – cultivation, quality assurance and marketing of a protein shooting-star**

*Münster, E.*

Geschäftsführung Brotbüro GmbH, Hamburg, Germany

Die Weiße Lupine liefert neben Soja das hochwertigste pflanzliche Eiweiß in Deutschland. Der Anbau wurde aufgrund einer Pflanzenkrankheit in den 90iger Jahren und einer geringen Nachfrage weitestgehend eingestellt. Das Brotbüro initiierte vor acht Jahren mit einer Gruppe von Bio-Land-

wirten aus Nord- und Ostdeutschland erneut den Anbau dieser Hülsenfrucht.

Mittlerweile führen alle Naturkosthändler in Deutschland mehrere Produkte mit Weißen Lupinen. Sie werden, im Gegensatz zu Soja und der Blauen Lupinen, ausschließlich für den Speisemarkt angebaut. Der Anbau stellt hohe Herausforderungen an die Landwirte und die Qualitätsanforderungen für die Lebensmittelverarbeitung sind hoch. Aber durch das gute Engagement aller Akteure des «Arbeitskreises Weiße Lupine» geht es kontinuierlich voran. Im Jahr 2018 wird der Anbau auf einer Fläche von insgesamt 200 ha geplant. Daraus wird im Spätherbst 2018 eine Ernte im Spätherbst zwischen 400 und 500 t erwartet.

**Disclosure:** none declared

NR. 77

### **Medications and medical products suitable for plant-based diet consumers**

*Bhamra, A.*

All Party Parliamentary Group (APPG) on Indian Traditional Sciences, London, UK

Our fraternity needs to shape the potential of regulations of medications and medical products, so that they are suitable for plant-based diet consumers. A large number of medications prescribed in the United Kingdom are derived from animal products. This renders them unsuitable for vegetarians and vegans. Many doctors and patients are unaware that commonly prescribed drugs contain animal products and simply reading the list of ingredients will not make it clear if the prescription meets the patient's diet regime.

**Disclosure:** none declared