

TITEL

Ernährung und Säure-Basen-Haushalt Physiologie und Prävention

- Abate N, Chandalia M, Cabo-Chan AV Jr, Moe OW, Sakhaee K: The metabolic syndrome and uric acid nephrolithiasis: novel features of renal manifestation of insulin resistance. *Kidney Int* 65, 386–92 (2004)
- Adam TC, Hasson RE, Ventura EE, Toledo-Corral C, Le KA, Mahurkar S, Lane CJ, Weigensberg MJ, Goran MI: Cortisol is negatively associated with insulin sensitivity in overweight Latino youth. *J Clin Endocrinol Metab* 95, 4729–35 (2010)
- Adeva MM, Souto G, Blanco N, Donapetry C: Ammonium metabolism in humans. *Metabolism* 61, 1495–511 (2012)
- Adeva MM, Souto G: Diet-induced metabolic acidosis. *Clin Nutr* 30, 416–21 (2011)
- Alexy U, Remer T, Manz F, Neu CM, Schoenau E: Long-term protein intake and dietary potential renal acid load are associated with bone modeling and remodeling at the proximal radius in healthy children. *Am J Clin Nutr* 82, 1107–14 (2005)
- Alpern RJ, Sakhaee K: The clinical spectrum of chronic metabolic acidosis: homeostatic mechanisms produce significant morbidity. *Am J Kidney Dis* 29, 291–302 (1997)
- Arbeitskreis Harnsteine der Akademie der Deutschen Urologen und Arbeitskreis Endourologie und Steinerkrankung der Österreichischen Gesellschaft für Urologie: Leitlinien zur Diagnostik, Therapie und Metaphylaxe der Urolithiasis vom 16. Februar 2009. <http://www.awmf.org/leitlinien/detail/ll/043-025.html>, abgerufen am 08.10.2013
- Arnett T: Regulation of bone cell function by acid-base balance. *Proc Nutr Soc* 62, 511–20 (2003)
- Arnett TR: Extracellular pH regulates bone cell function. *J Nutr* 138, 415S–418S (2008)
- Bähr V, Pfeiffer AF, Diederich S: The metabolic syndrome X and peripheral cortisol synthesis. *Exp Clin Endocrinol Diabetes* 110, 313–8 (2002)
- Berkemeyer S, Remer T: Anthropometrics provide a better estimate of urinary organic acid anion excretion than a dietary mineral intake-based estimate in children, adolescents, and young adults. *J Nutr* 136, 1203–8 (2006)
- Berkemeyer S, Vormann J, Günther AL, Rylander R, Frassetto LA, Remer T: Renal net acid excretion capacity is comparable in prepubescence, adolescence, and young adulthood but falls with aging. *J Am Geriatr Soc* 56, 1442–8 (2008)
- Bonjour JP: Nutritional disturbance in acid-base balance and osteoporosis: a hypothesis that disregards the essential homeostatic role of the kidney. *Br J Nutr* 4, 1–10 [Epub ahead of print] (2013)
- Bonjour JP: Protein intake and bone health. *Int J Vitam Nutr Res* 81, 134–42 (2011)
- Breen L, Phillips SM: Nutrient interaction for optimal protein anabolism in resistance exercise. *Curr Opin Clin Nutr Metab Care* 15, 226–32 (2012)
- Buehlmeier J, Frings-Meuthen P, Remer T, Maser-Gluth C, Stehle P, Biolo G, Heer M: Alkaline salts to counteract bone resorption and protein wasting induced by high salt intake: results of a randomized controlled trial. *J Clin Endocrinol Metab* 97, 4789–97 (2012)
- Burckhardt P: The effect of the alkali load of mineral water on bone metabolism: interventional studies. *J Nutr* 138, 435S–437S (2008)
- Cermak NM, Res PT, de Groot LC, Saris WH, van Loon LJ: Protein supplementation augments the adaptive response of skeletal muscle to resistance-type exercise training: a meta-analysis. *Am J Clin Nutr* 96, 1454–64 (2012)
- Cupisti A, Meola M, D'Alessandro C, Bernabini G, Pasquali E, Carpi A, Barsotti G: Insulin resistance and low urinary citrate excretion in calcium stone formers. *Biomed Pharmacother* 61, 86–90 (2007)
- DeFronzo RA, Beckles AD: Glucose intolerance following chronic metabolic acidosis in man. *Am J Physiol* 236, E328–34 (1979)
- Donowitz M, Ming Tse C, Fuster D: SLC9/NHE gene family, a plasma membrane and organellar family of Na⁺/H⁺ exchangers. *Mol Aspects Med* 34, 236–51 (2013)
- Eladari D, Chambrey R: Ammonium transport in the kidney. *J Nephrol* 23 Suppl 16, S28–34 (2010)
- Engberink MF, Bakker SJ, Brink EJ, van Baak MA, van Rooij FJ, Hofman A, Witteman JC, Geleijnse JM: Dietary acid load and risk of hypertension: the Rotterdam Study. *Am J Clin Nutr* 95, 1438–44 (2012)
- Fan Y, Menon RK, Cohen P, Hwang D, Clemens T, DiGirolamo DJ, Kopchick JJ, Le Roith D, Trucco M, Sperling MA: Liver-specific deletion of the growth hormone receptor reveals essential role of growth hormone signaling in hepatic lipid metabolism. *J Biol Chem* 284, 19937–44 (2009)
- Farwell WR, Taylor EN: Serum bicarbonate, anion gap and insulin resistance in the National Health and Nutrition Examination Survey. *Diabet Med* 25, 798–804 (2008)
- Fenton TR, Lyon AW, Eliasziw M, Tough SC, Hanley DA: Meta-analysis of the effect of the acid-ash hypothesis of osteoporosis on calcium balance. *J Bone Miner Res* 24, 1835–40 (2009a)
- Fenton TR, Lyon AW, Eliasziw M, Tough SC, Hanley DA: Phosphate decreases urine calcium and increases calcium balance: a meta-analysis of the osteoporosis acid-ash diet hypothesis. *Nutr J* 8, 41 (2009b)
- Fenton TR, Lyon AW: Milk and acid-base balance: proposed hypothesis versus scientific evidence. *J Am Coll Nutr* 30, 471S–5S (2011a)
- Fenton TR, Tough SC, Lyon AW, Eliasziw M, Hanley DA: Causal assessment of dietary acid load and bone disease: a systematic review & meta-analysis applying Hill's epidemiologic criteria for causality. *Nutr J* 10, 41 (2011b)
- Frassetto L, Sebastian A: Age and systemic acid-base equilibrium: analysis of published data. *J Gerontol A Biol Sci Med Sci* 51, B91–9 (1996)
- Frassetto LA, Morris RC Jr, Sebastian A: Dietary sodium chloride intake independently predicts the degree of hyperchloremic metabolic acidosis in healthy humans consuming a net acid-producing diet. *Am J Physiol Renal Physiol* 293, F521–5 (2007)
- Frassetto LA, Morris RC Jr, Sebastian A: Effect of age on blood acid-base composition in adult humans: role of age-related renal functional decline. *Am J Physiol* 271, F1114–22 (1996)
- Frassetto LA, Sebastian A: Commentary to accompany the paper entitled 'Nutritional disturbance in acid-base balance and osteoporosis: a hypothesis that disregards the essential homeostatic role of the kidney', by Jean-Philippe Bonjour. *Br J Nutr* 110, 1935–7 (2013)

- Frassetto LA, Shi L, Schloetter M, Sebastian A, Remer T: Established dietary estimates of net acid production do not predict measured net acid excretion in patients with Type 2 diabetes on Paleolithic-Hunter-Gatherer-type diets. *Eur J Clin Nutr* 67, 899–903 (2013)
- Frassetto LA, Todd KM, Morris RC Jr, Sebastian A: Estimation of net endogenous noncarbonic acid production in humans from diet potassium and protein contents. *Am J Clin Nutr* 68, 576–83 (1998)
- Frassetto LA, Morris RC Jr, Sebastian A: A practical approach to the balance between acid production and renal acid excretion in humans. *J Nephrol* 19, S33–S40 (2006)
- Gumz ML, Lynch IJ, Greenlee MM, Cain BD, Wingo CS: The renal H⁺-K⁺-ATPases: physiology, regulation, and structure. *Am J Physiol Renal Physiol* 298, F12–21 (2010)
- Halperin ML, Jungas RL: Metabolic production and renal disposal of hydrogen ions. *Kidney Int* 24, 709–13 (1983)
- Harris SS, Dawson-Hughes B: No effect of bicarbonate treatment on insulin sensitivity and glucose control in non-diabetic older adults. *Endocrine* 38, 221–6 (2010)
- Häussinger D: Liver regulation of acid-base balance. *Miner Electrolyte Metab* 23, 249–52 (1997)
- Jehle S, Hulter HN, Krapf R: Effect of potassium citrate on bone density, microarchitecture, and fracture risk in healthy older adults without osteoporosis: a randomized controlled trial. *J Clin Endocrinol Metab* 98, 207–17 (2013)
- Jehle S, Krapf R: Effects of acidogenic diet forms on musculoskeletal function. *J Nephrol* 23, S77–84 (2010)
- Jehle S, Zanetti A, Muser J, Hulter HN, Krapf R: Partial neutralization of the acidogenic Western diet with potassium citrate increases bone mass in postmenopausal women with osteopenia. *J Am Soc Nephrol* 17, 3213–22 (2006)
- Krieger NS, Frick KK, Bushinsky DA: Mechanism of acid-induced bone resorption. *Curr Opin Nephrol Hypertens* 13, 423–36 (2004)
- Krupp D, Johner SA, Kalhoff H, Buyken AE, Remer T: Long-term dietary potential renal acid load during adolescence is prospectively associated with indices of nonalcoholic fatty liver disease in young women. *J Nutr* 142, 313–9 (2012a)
- Krupp D, Shi L, Remer T: Longitudinal relationships between diet-dependent renal acid load and blood pressure development in healthy children. *Kidney Int* 85, 204–10 (2014)
- Krupp D, Ströhle A, Remer T: Dietary acid load and risk of hypertension. *Am J Clin Nutr* 96, 942–3 (2012b)
- Kurtz A: Funktion der Nieren und Regulation des Wasser- und Elektrolyt-Haushalts. In: Löffler G, Petrides PE, Heinrich PC (Hrsg.). *Biochemie und Pathobiochemie*. Springer, Heidelberg, 893–950 (2007)
- Kurtz I, Maher T, Hulter HN, Schambelan M, Sebastian A: Effect of diet on plasma acid-base composition in normal humans. *Kidney Int* 24, 670–80 (1983)
- Lang F: Mechanisms and significance of cell volume regulation. *J Am Coll Nutr* 26, 613S–623S (2007)
- Lemann J Jr, Bushinsky DA, Hamm LL: Bone buffering of acid and base in humans. *Am J Physiol Renal Physiol* 285, F811–32 (2003)
- Lemann J Jr, Gray RW, Pleuss JA: Potassium bicarbonate, but not sodium bicarbonate, reduces urinary calcium excretion and improves calcium balance in healthy men. *Kidney Int* 35, 688–95 (1989)
- Löffler G, Petrides PE: Grundlagen der Lebensvorgänge. In: Löffler G, Petrides PE, Heinrich PC (Hrsg.). *Biochemie und Pathobiochemie*. Springer, Heidelberg, 7–20 (2007)
- Maalouf NM, Cameron MA, Moe OW, Adams-Huet B, Sakhaee K: Low urine pH: a novel feature of the metabolic syndrome. *Clin J Am Soc Nephrol* 2, 883–8 (2007)
- Mandel EI, Curhan GC, Hu FB, Taylor EN: Plasma bicarbonate and risk of type 2 diabetes mellitus. *CMAJ* 184, E719–25 (2012)
- Mangano KM, Walsh SJ, Kenny AM, Insogna KL, Kerstetter JE: Dietary acid load is associated with lower bone mineral density in men with low intake of dietary calcium. *J Bone Miner Res* 29, 500–6 (2014)
- Manz F, Remer T, Decher-Splithoff E, Höhler M, Kersting M, Kunz C, Lausen B: Effects of a high protein intake on renal acid excretion in bodybuilders. *Z Ernährungswiss* 34, 10–5 (1995)
- Manz F, Vecsei P, Wesch H: Renal acid excretion and renal solute load in healthy children and adults. (Renale Säureausscheidung und renale Molenlast bei gesunden Kindern und Erwachsenen) *Monatsschr Kinderheilkd* 132, 163–167 (1984)
- Manz F: History of nutrition and acid-base physiology. *Eur J Nutr* 40, 189–99 (2001)
- Marangella M, Di Stefano M, Casalis S, Berutti S, D'Amelio P, Isaia GC: Effects of potassium citrate supplementation on bone metabolism. *Calcif Tissue Int* 74, 330–5 (2004)
- Maurer M, Riesen W, Muser J, Hulter HN, Krapf R: Neutralization of Western diet inhibits bone resorption independently of K intake and reduces cortisol secretion in humans. *Am J Physiol Renal Physiol* 284, F32–40 (2003)
- McCarty MF: Acid-base balance may influence risk for insulin resistance syndrome by modulating cortisol output. *Me Hypotheses* 64, 380–4 (2005)
- McLean RR, Qiao N, Broe KE, Tucker KL, Casey V, Cupples LA, Kiel DP, Hannan MT: Dietary acid load is not associated with lower bone mineral density except in older men. *J Nutr* 141, 588–94 (2011)
- McMurtrie HL, Cleary HJ, Alvarez BV, Loiselle FB, Sterling D, Morgan PE, Johnson DE, Casey JR: The bicarbonate transport metabolism. *J Enzyme Inhib Med Chem* 19, 231–6 (2004)
- Michaud DS, Troiano RP, Subar AF, Runswick S, Bingham S, Kipnis V, Schatzkin A: Comparison of estimated renal net acid excretion from dietary intake and body size with urine pH. *J Am Diet Assoc* 103, 1001–7 (2003)
- Mitch WE: Metabolic and clinical consequences of metabolic acidosis. *J Nephrol* 19, S70–5 (2006)
- Moseley K, Weaver C, Appel L, Sebastian A, Sellmeyer DE: Potassium citrate supplementation results in sustained improvement in calcium balance in older men and women. *J Bone Miner Res* 28, 497–504 (2013)
- Murakami K, Sasaki S, Takahashi Y, Uenishi K: Japan Dietetic Students' Study for Nutrition and Biomarkers Group. Association between dietary acid-base load and cardiometabolic risk factors in young Japanese women. *Br J Nutr* 100, 642–51 (2008)
- Oh MS: New perspectives on acid-base balance. *Semin Dial* 13, 212–9 (2000)
- Pedone C, Napoli N, Pozzilli P, Lauretani F, Bandinelli S, Ferrucci L, Antonelli-Incalzi R: Quality of diet and potential renal acid load as risk factors for reduced bone density in elderly women. *Bone* 46, 1063–7 (2010)
- Pereverzev A, Komarova SV, Kocok J, Armstrong S, Tremblay GB, Dixon SJ, Sims SM: Extracellular acidification enhances osteoclast survival through an NFAT-independent, protein kinase C-dependent pathway. *Bone* 42, 150–61 (2008)
- Phillips SM, Van Loon LJ: Dietary protein for athletes: from requirements to optimum adaptation. *J Sports Sci* 29, S29–38 (2011)
- Pizzorno J, Frassetto LA, Katzinger J: Diet-induced acidosis: is it real and clinically relevant? *Br J Nutr* 103, 1185–94 (2010)

- Poupin N, Calvez J, Lassale C, Chesneau C, Tomé D: Impact of the diet on net endogenous acid production and acid-base balance. *Clin Nutr* 31, 313–21 (2012)
- Purnell JQ, Kahn SE, Samuels MH, Brandon D, Loriaux DL, Brunzell JD: Enhanced cortisol production rates, free cortisol, and 11 β -HSD-1 expression correlate with visceral fat and insulin resistance in men: effect of weight loss. *Am J Physiol Endocrinol Metab* 296, E351–7 (2009)
- Reddy ST, Wang CY, Sakhaee K, Brinkley L, Pak CY: Effect of low-carbohydrate high-protein diets on acid-base balance, stone-forming propensity, and calcium metabolism. *Am J Kidney Dis* 40, 265–74 (2002)
- Rehner G, Daniel H: *Biochemie der Ernährung*. Spektrum Akademischer Verlag, Heidelberg, Berlin (1999)
- Remer T, Berkemeyer S, Rylander R, Vormann J: Muscularity and adiposity in addition to net acid excretion as predictors of 24-h urinary pH in young adults and elderly. *Eur J Clin Nutr* 61, 605–9 (2007)
- Remer T, Dimitriou T, Manz F: Dietary potential renal acid load and renal net acid excretion in healthy, free-living children and adolescents. *Am J Clin Nutr* 77, 1255–60 (2003)
- Remer T, Krupp D, Shi L: Dietary protein's and dietary acid load's influence on bone health. *Crit rev Food Sci Nutr* 54, 1140–50 (2014)
- Remer T, Manz F, Alexy U, Schoenau E, Wudy SA, Shi L: Long-term high urinary potential renal acid load and low nitrogen excretion predict reduced diaphyseal bone mass and bone size in children. *J Clin Endocrinol Metab* 96, 2861–8 (2011)
- Remer T, Manz F: Estimation of the renal net acid excretion by adults consuming diets containing variable amounts of protein. *Am J Clin Nutr* 59, 1356–61 (1994)
- Remer T, Manz F: Potential renal acid load of foods and its influence on urine pH. *J Am Diet Assoc* 95, 791–7 (1995)
- Remer T: Influence of diet on acid-base balance. *Semin Dial* 13, 221–6 (2000)
- Remer T: Influence of nutrition on acid-base balance – metabolic aspects. *Eur J Nutr* 40, 214–20 (2001)
- Remer T: Säure-Basen-Haushalt und Ernährung. *Physiologische und klinische Aspekte*. *Schweiz Zschr GanzheitsMedizin* 18, 41–46 (2006)
- Rochow N, Jochum F, Redlich A, Korinekova Z, Linnemann K, Weitmann K, Boehm G, Müller H, Kalhoff H, Topp H, Hoffmann W, Fusch C: Fortification of breast milk in VLBW infants: metabolic acidosis is linked to the composition of fortifiers and alters weight gain and bone mineralization. *Clin Nutr* 30, 99–105 (2011)
- Rylander R, Tallheden T, Vormann J: Acid-base conditions regulate calcium and magnesium homeostasis. *Magnes Res* 22, 262–5 (2009)
- Schubert ML: Gastric secretion. *Curr Opin Gastroenterol* 27, 536–42 (2011)
- Scialla JJ, Anderson CA: Dietary acid load: a novel nutritional target in chronic kidney disease? *Adv Chronic Kidney Dis* 20, 141–9 (2013)
- Sebastian A, Frassetto LA, Sellmeyer DE, Merriam RL, Morris RC Jr: Estimation of the net acid load of the diet of ancestral preagricultural Homo sapiens and their hominid ancestors. *Am J Clin Nutr* 76, 1308–16 (2002)
- Sebastian A, Morris RC Jr: Improved mineral balance and skeletal metabolism in postmenopausal women treated with potassium bicarbonate. *N Engl J Med* 331, 279 (1994)
- Sepponen K, Ruusunen M, Pakkanen JA, Pösö AR: Expression of CD147 and monocarboxylate transporters MCT1, MCT2 and MCT4 in porcine small intestine and colon. *Vet J* 174, 122–8 (2007)
- Shimoyama Y, Kirat D, Akihara Y, Kawasako K, Komine M, Hirayama K, Matsuda K, Okamoto M, Iwano H, Kato S, Taniyama H: Expression of monocarboxylate transporter 1 (MCT1) in the dog intestine. *J Vet Med Sci* 69, 599–604 (2007)
- Siener R, Hesse A: The effect of a vegetarian and different omnivorous diets on urinary risk factors for uric acid stone formation. *Eur J Nutr* 42, 332–7 (2003)
- Siener R, Hesse A: The effect of different diets on urine composition and the risk of calcium oxalate crystallisation in healthy subjects. *Eur Urol* 42, 289–96 (2002)
- Siener R, Laube N, Strohmaier WL: [Recurrence prevention of urolithiasis with respect to economic aspects]. *Urologe A* 50, 1276, 1278–82 (2011)
- Siener R, Schade N, Nicolay C, von Unruh GE, Hesse A: The efficacy of dietary intervention on urinary risk factors for stone formation in recurrent calcium oxalate stone patients. *J Urol* 173, 1601–5 (2005)
- Siener R: Einfluss der Ernährung auf den Säure-Basen-Haushalt. *Ernähr Umsch* 53, 168–173 (2006)
- Skelton LA, Boron WF, Zhou Y: Acid-base transport by the renal proximal tubule. *J Nephrol* 23, S4–18 (2010)
- Souto G, Donapetry C, Calviño J, Adeva MM: Metabolic acidosis-induced insulin resistance and cardiovascular risk. *Metab Syndr Disord* 9, 247–53 (2011)
- Street D, Bangsbo J, Juul C: Interstitial pH in human skeletal muscle during and after dynamic graded exercise. *J Physiol* 537, 993–8 (2001)
- Ströhle A, Hahn A, Sebastian A: Estimation of the diet-dependent net acid load in 229 worldwide historically studied hunter-gatherer societies. *Am J Clin Nutr* 91, 406–12 (2010a)
- Ströhle A, Hahn A, Sebastian A: Latitude, local ecology, and hunter-gatherer dietary acid load: implications from evolutionary ecology. *Am J Clin Nutr* 92, 940–5 (2010b)
- Ströhle A, Hahn A: Ernährung wie in der Steinzeit!? Einsichten und Missverständnisse. *Ernährung im Fokus* 10, 450–56 (2010)
- Ströhle A, Waldmann A, Koschizke J, Leitzmann C, Hahn A: Diet-dependent net endogenous acid load of vegan diets in relation to food groups and bone health-related nutrients: results from the German Vegan Study. *Ann Nutr Metab* 59, 117–126 (2011)
- Ströhle A, Waldmann A, Wolters M, Hahn A: Vegetarische Ernährung: Präventives Potenzial und mögliche Risiken. Teil 1: Lebensmittel pflanzlicher Herkunft. *Wien Klin Wochenschr* 118, 580–93 (2006)
- Takahashi S, Inokuchi T, Kobayashi T, Ka T, Tsutsumi Z, Moriwaki Y, Yamamoto T: Relationship between insulin resistance and low urinary pH in patients with gout, and effects of PPAR α agonists on urine pH. *Horm Metab Res* 39, 511–4 (2007)
- Taylor EN, Forman JP, Farwell WR: Serum anion gap and blood pressure in the national health and nutrition examination survey. *Hypertension* 50, 320–4 (2007)
- Taylor EN, Mount DB, Forman JP, Curhan GC: Association of prevalent hypertension with 24-hour urinary excretion of calcium, citrate, and other factors. *Am J Kidney Dis* 47, 780–9 (2006)
- Teramae H, Yoshikawa T, Inoue R, Ushida K, Takebe K, Nio-Kobayashi J, Iwanaga T: The cellular expression of SMCT2 and its comparison with other transporters for monocarboxylates in the mouse digestive tract. *Biomed Res* 31, 239–49 (2010)
- Thorpe M, Mojtahedi MC, Chapman-Novakofski K, McAuley E, Evans EM: A positive association of lumbar spine bone mineral density with dietary protein is suppressed by a negative association with protein sulfur. *J Nutr* 138, 80–5 (2008)
- Trinchieri A, Lizzano R, Marchesotti F, Zanetti G: Effect of potential renal acid load of foods on urinary citrate excretion in calcium renal stone formers. *Urol Res* 34, 1–7 (2006)

- Trinchieri A, Maletta A, Lizzano R, Marchesotti F: Potential renal acid load and the risk of renal stone formation in a case-control study. *Eur J Clin Nutr* 67, 1077–1080 (2013)
- Trinchieri A, Zanetti G, Currò A, Lizzano R: Effect of potential renal acid load of foods on calcium metabolism of renal calcium stone formers. *Eur Urol* 39, S33–6 (2001)
- Völzke H, Nauck M, Rettig R, Dörr M, Higham C, Brabant G, Walaschowski H: Association between hepatic steatosis and serum IGF1 and IGF1BP-3 levels in a population-based sample. *Eur J Endocrinol* 161, 705–13 (2009)
- Von Koerber K, Männle T, Leitzmann C: *Vollwert-Ernährung. Konzeption einer zeitgemäßen und nachhaltigen Ernährung*. 11. Aufl., Haug, Stuttgart (2012)
- Vormann J, Daniel H: The role of nutrition in human acid-base homeostasis. *Eur J Nutr* 40, 187–8 (2001)
- Vormann J, Goedecke T: Acid-Base homeostasis: latent acidosis as a cause of chronic disease. *Schweiz Z GanzheitsMedizin* 18, 255–66 (2006)
- Wagner CA, Devuyst O, Bourgeois S, Mohebbi N: Regulated acid-base transport in the collecting duct. *Pflügers Arch* 458, 137–56 (2009)
- Wagner CA, Kovacicova J, Stehberger PA, Winter C, Benabbas C, Mohebbi N: Renal acid-base transport: old and new players. *Nephron Physiol* 103, 1–6 (2006)
- Waldmann A, Koschizke JW, Leitzmann C, Hahn A: Dietary intakes and lifestyle factors of a vegan population in Germany: results from the German Vegan Study. *Eur J Clin Nutr* 57, 947–55 (2003)
- Walker BG, Phear DN, Martin FI, Baird CW: Inhibition of insulin by acidosis. *Lancet* 2, 964–5 (1963)
- Weerachayaphorn J, Pajor AM: Identification of transport pathways for citric acid cycle intermediates in the human colon carcinoma cell line, Caco-2. *Biochim Biophys Acta* 1778, 1051–9 (2008)
- Weiner ID, Verlander JW: Role of NH₃ and NH₄⁺ transporters in renal acid-base transport. *Am J Physiol Renal Physiol* 300, F11–23 (2011)
- Welch AA, Bingham SA, Reeve J, Khaw KT: More acidic dietary acid-base load is associated with reduced calcaneal broadband ultrasound attenuation in women but not in men: results from the EPIC-Norfolk cohort study. *Am J Clin Nutr* 85, 1134–41 (2007)
- Wiederkehr M, Krapf R: Metabolic and endocrine effects of metabolic acidosis in humans. *Swiss Med Wkly* 131, 127–32 (2001)
- Wolfe RR: Protein supplements and exercise. *Am J Clin Nutr* 72, S551–57 (2000)
- Wolffram S, Unternährer R, Grenacher B, Scharrer E: Transport of citrate across the brush border and basolateral membrane of rat small intestine. *Comp Biochem Physiol Physiol* 109, 39–52 (1994)
- Wynn E, Krieg MA, Aeschlimann JM, Burckhardt P: Alkaline mineral water lowers bone resorption even in calcium sufficiency: alkaline mineral water and bone metabolism. *Bone* 44, 120–4 (2009a)
- Wynn E, Lanham-New SA, Krieg MA, Whittamore DR, Burckhardt P: Low estimates of dietary acid load are positively associated with bone ultrasound in women older than 75 years of age with a lifetime fracture. *J Nutr* 138, 1349–54 (2008)
- Wynn E, Raetz E, Burckhardt P: The composition of mineral waters sourced from Europe and North America in respect to bone health: composition of mineral water optimal for bone. *Br J Nutr* 101, 1195–9 (2009b)
- Zacchia M, Preisig P: Low urinary citrate: an overview. *J Nephrol* 23, S49–56 (2010)
- Zhang L, Curhan GC, Forman JP: Diet-dependent net acid load and risk of incident hypertension in United States women. *Hypertension* 54, 751–5 (2009)

Calcium, Milch und Knochengesundheit

- Appleby P, Roddam A, Allen N, Key T: Comparative fracture risk in vegetarians and nonvegetarians in EPIC-Oxford. *Eur J Clin Nutr* 61 (12), 1400–6 (2007)
- Biesalski HK, Grimm P: *Taschenatlas der Ernährung*. 5. Aufl., Georg Thieme Verlag, Stuttgart (2011)
- Bonjour JP: Nutritional disturbance in acid-base balance and osteoporosis: a hypothesis that disregards the essential homeostatic role of the kidney. *Br J Nutr* 110 (7), 1168–77 (2013)
- Cao JJ, Johnson LK, Hunt JR: A diet high in meat protein and potential renal acid load increases fractional calcium absorption and urinary calcium excretion without affecting markers of bone resorption or formation in postmenopausal Women. *J Nutr* 141 (3), 391–7 (2011)
- Caroli A, Poli A, Ricotta D, Banfi G, Cocchi D: Invited review: Dairy intake and bone health: a viewpoint from the state of the art. *J Dairy Sci* 94 (11), 5249–62 (2011)
- Charoenkiatkul S, Kriengsinyos W, Tuntipopipat S, Suthutvoravut U, Weaver CM: Calcium absorption from commonly consumed vegetables in healthy Thai women. *J Food Sci* 73 (9), H218–21 (2008)
- Clarys P, Deliens T, Huybrechts I, Driemaeker P, Vanaelst B, De Keyser W, Hebbelinc M, Mullie P: Comparison of nutritional quality of the vegan, vegetarian, semi-vegetarian, pesco-vegetarian and omnivorous diet. *Nutrients* 6 (3), 1318–32 (2014)
- Crowe FL, Steur M, Allen NE, Appleby PN, Travis RC, Key TJ: Plasma concentrations of 25-hydroxyvitamin D in meat eaters, fish eaters, vegetarians and vegans: results from the EPIC-Oxford study. *Public Health Nutr* 14 (2), 340–6 (2011)
- Davey GK, Spencer EA, Appleby PN, Allen NE, Knox KH, Key TJ: EPIC-Oxford: lifestyle characteristics and nutrient intakes in a cohort of 33 883 meat-eaters and 31 546 non meat-eaters in the UK. *Public Health Nutr* 6 (3), 259–69 (2003)
- Deutsche Gesellschaft für Ernährung, Österreichische Gesellschaft für Ernährung, Schweizerische Gesellschaft für Ernährungsforschung, Schweizerische Vereinigung für Ernährung (Hrsg.): *Referenzwerte für die Nährstoffzufuhr*. 1. Aufl., 5. korr. Nachdruck, Neuer Umschau Buchverlag, Neustadt an der Weinstraße (2013)
- FAO/WHO (Food and Agriculture Organization/World Health Organization): *Vitamin and mineral requirements in human nutrition: report of a joint FAO/WHO expert consultation on human vitamin and mineral requirements*. 2nd ed, WHO, Geneva (2004)
- Fenton TR, Tough SC, Lyon AW, Eliasziw M, Hanley DA: Causal assessment of dietary acid load and bone disease: a systematic review & meta-analysis applying Hill's epidemiologic criteria for causality. *Nutr J* 30 (10), 41 (2011)
- Fontana L, Shew JL, Holloszy JO, Villareal DT: Low bone mass in subjects on a long-term raw vegetarian diet. *Arch Intern Med* 165 (6), 684–9 (2005)
- Frassetto LA, Todd KM, Morris RC, Sebastian A: Worldwide incidence of hip fracture in elderly women: Relation to consumption of animal and vegetable foods. *J Gerontol A Biol Sci Med Sci* 55 (10), M585–92 (2000)
- Hadji P, Klein S, Gothe H, Häussler B, Kless T, Schmidt T, Steinle T, Verheyen F, Linder R: The Epidemiology of Osteoporosis-Bone Evaluation Study (BEST): An analysis of routine health insurance data. *Dtsch Arztebl Int* 110 (4), 52–57 (2013)

- Hanley DA, Whiting SJ: Does a high dietary acid content cause bone loss, and can bone loss be prevented with an alkaline diet? *J Clin Densitom* 16 (4), 420–5 (2013)
- Haron H, Shahar S, O'Brien KO, Ismail A, Kamaruddin N, Rahman SA: Absorption of calcium from milk and tempeh consumed by postmenopausal Malay women using the dual stable isotope technique. *Int J Food Sci Nutr* 61 (2), 125–37 (2010)
- Heaney RP: Bone mass, nutrition, and other lifestyle factors. *Am J Med* 95 (5A), 29S–33 (1993)
- Heaney RP: Protein intake and bone health: the influence of belief system on the conduct of nutritional science. *Am J Clin Nutr* 73 (1), 5–6 (2001)
- Heaney RP: Absorbability and utility of calcium in mineral waters. *Am J Clin Nutr* 84 (2), 371–4 (2006)
- Heaney RP: Dairy and bone health. *J Am Coll Nutr* 28 Suppl 1 (1), 82S–90S (2009)
- Heaney RP, Dowell MS, Rafferty K, Bierman J: Bioavailability of the calcium in fortified soy imitation milk, with some observations on method. *Am J Clin Nutr* 71 (5), 1166–1169 (2000)
- Heaney RP, Weaver CM, Fitzsimmons ML: Soybean phytate content: effect on calcium absorption. *Am J Clin Nutr* 53 (3), 745–7 (1991)
- Heaney RP, Weaver CM, Recker RR: Calcium absorbability from spinach. *Am J Clin Nutr* 47 (4), 707–9 (1988)
- Ho-Pham LT, Nguyen PL, Le TTT, Doan TA, Tran NT, Le TA, Nguyen TV: Veganism, bone mineral density and body composition: a study in Buddhist nuns. *Osteoporos Int* 20 (12), 2087–93 (2009)
- Ho-Pham LT, Vu BQ, Lai TQ, Nguyen ND, Nguyen TV: Vegetarianism, bone loss, fracture and vitamin D: a longitudinal study in Asian vegans and non-vegans. *Eur J Clin Nutr* 66 (1), 75–82 (2012)
- International Osteoporosis Foundation: The Asian Audit – Epidemiology, costs and burden of osteoporosis in Asia 2009 (2009)
- Kamchan A, Puwastien P, Sirichakwal PP, Kongkachuichai R: In vitro calcium bioavailability of vegetables, legumes and seeds. *J Food Comp Anal* 17 (3–4), 311–320 (2004)
- Kanis JA, Odén A, McCloskey EV, Johansson H et al.: A systematic review of hip fracture incidence and probability of fracture worldwide. *Osteoporos Int* 23 (9), 2239–56 (2012)
- Kerstetter JE, O'Brien KO, Caseria DM, Wall DE, Insogna KL: The impact of dietary protein on calcium absorption and kinetic measures of bone turnover in women. *J Clin Endocrinol Metab* 90 (1), 26–31 (2005)
- Kwak H-S, Lee W-J, Lee M-R: Revisiting lactose as an enhancer of calcium absorption. *Int Dairy J* 22, 147–51 (2012)
- Leitzmann C, Keller M: Vegetarische Ernährung. 3. Aufl., Verlag Eugen Ulmer, Stuttgart (2013)
- Levis S, Lagari VS: The role of diet in osteoporosis prevention and management. *Curr Osteoporos Rep* 10 (4), 296–302 (2012)
- Lutz J: Calcium balance and acid-base status of women as affected by increased protein intake and by sodium bicarbonate ingestion. *Am J Clin Nutr* 39 (2), 281–8 (1984)
- Mangano KM, Sahni S, Kerstetter JE: Dietary protein is beneficial to bone health under conditions of adequate calcium intake: an update on clinical research. *Curr Opin Clin Nutr Metab Care* 17 (1), 69–74 (2014)
- Mangels AR: Bone nutrients for vegetarians. *Am J Clin Nutr* 4; 100 (Supplement 1), 329S–35S (2014)
- Max Rubner-Institut (Hrsg.): Nationale Verzehrsstudie II. Ergebnisbericht, Teil 2. Karlsruhe (2008)
- New SA, Bolton-Smith C, Grubb DA, Reid DM: Nutritional influences on bone mineral density: a cross-sectional study in premenopausal women. *Am J Clin Nutr* 65 (6), 1831–9 (1997)
- New SA, MacDonald H, Campbell M, Martin JC, Garton MJ, Robins SP, Reid DM: Lower estimates of net endogenous non-carbonic acid production are positively associated with indexes of bone health in premenopausal and perimenopausal women. *Am J Clin Nutr* 79 (1), 131–8 (2004)
- New SA, Robins S, Campbell M, Martin JC, Garton MJ, Bolton-Smith C, Grubb DA, Lee SJ, Reid DM: Dietary influences on bone mass and bone metabolism: further evidence of a positive link between fruit and vegetable consumption and health? *Am J Clin Nutr* 71 (1), 142–52 (2000)
- Nickel KP, Martin BR, Smith DL, Smith JB, Miller GD, Weaver CM: Calcium bioavailability from bovine milk and dairy products in premenopausal women using intrinsic and extrinsic labeling techniques. *J Nutr* 126 (5), 1406–1411 (1996)
- Nieves JW: Osteoporosis: the role of micronutrients. *Am J Clin Nutr* 81 (5), 1232S–1239S (2005)
- Pohl S: Ernährung bei Osteoporose. *Ernährung im Fokus* 12 (3–4), 138–44 (2012)
- Remer T, Krupp D, Shi L: Dietary protein's and dietary acid load's influence on bone health. *Crit Rev Food Sci Nutr* 54 (9), 1140–50 (2014)
- Ringe JD: Erkrankungen des Skelettsystems: Osteoporose. S. 738–46. In: Biesalski HK, Bischoff SC, Puchstein C (Hrsg.): Ernährungsmethodik – Nach dem neuen Curriculum Ernährungsmedizin der Bundesärztekammer. 4. Aufl., Georg Thieme Verlag, Stuttgart, New York (2010)
- Rizzoli R, Abraham C, Brandi M: Nutrition and bone health: turning knowledge and beliefs into healthy behaviour. *Curr Med Res Opin* 30 (1), 131–41 (2014)
- Siener R, Hesse A: The effect of different diets on urine composition and the risk of calcium oxalate crystallisation in healthy subjects. *Eur Urol* 42 (3), 289–96 (2002)
- Souci SW, Fachmann W, Kraut H: Food Composition and Nutrition Tables – Die Zusammensetzung der Lebensmittel Nährwert-Tabellen – La composition des aliments Tableaux des valeurs nutritives. 7. Aufl., Wissenschaftliche Verlagsgesellschaft, Stuttgart (2008)
- Tang AL, Walker KZ, Wilcox G, Strauss BJ, Ashton JF, Stojanovska L: Calcium absorption in Australian osteopenic post-menopausal women: an acute comparative study of fortified soymilk to cows' milk. *Asia Pac J Clin Nutr* 19 (2), 243–9 (2010)
- Tucker K, Hannan M, Chen H, Cupples LA, Wilson PW, Kiel DP: Potassium, magnesium and fruit and vegetable intakes are associated with greater bone mineral density in elderly men and women. *Am J Clin Nutr* 69 (4), 727–36 (1999)
- Ünal G, El S, Kiliç S: In vitro determination of calcium bioavailability of milk, dairy products and infant formulas. *Int J Food Sci Nutr* 56 (1), 13–22 (2005)
- United States Department of Agriculture: National Nutrient Database for Standard Reference, <http://ndb.nal.usda.gov/ndb/>, abgerufen am 23.09.14
- Vormann J, Goedecke T: Latente Azidose: Übersäuerung als Ursache chronischer Erkrankungen. *Schweiz Z Ganzheitsmed* 14 (2), 90–6 (2002)
- Waldmann A, Koschizke JW, Leitzmann C, Hahn A: Dietary intakes and lifestyle factors of a vegan population in Germany: results from the German Vegan Study. *Eur J Clin Nutr* 57 (8), 947–55 (2003)
- Weaver CM: How sound is the science behind the dietary recommendations for dairy? *Am J Clin Nutr* 99 (5 Suppl), 1217S–22S (2014)
- Weaver CM, Heaney RP, Connor L, Martin BR, Smith DL, Nielsen S: Bioavailability of calcium from tofu as compared with milk in premenopausal Women. *J Food Sci* 67 (8), 3144–7 (2002)

Weaver CM, Heaney RP, Nickel KP, Packard PI: Calcium bioavailability from high oxalate vegetables: Chinese vegetables, sweet potatoes and rhubarb. *J Food Sci* 62 (3), 524–5 (1997)

Weaver CM, Heaney RP, Proulx WR, Hinders SM, Packard PI: Absorbability of calcium from common beans. *J Food Sci* 58 (6), 1401–1403 (1993)

Weiß C: Oxalsäure. *Ernährungs Umschau* 56 (11), 636–639 (2009)

Zemel MB: Calcium utilization: effect of varying level and source of dietary protein. *Am J Clin Nutr* 48 (9, Suppl), 880–3 (1988)

Zhao Y, Martin B, Weaver C: Calcium bioavailability of calcium carbonate fortified soymilk is equivalent to cow's milk in young women. *J Nutr* 135 (10), 2379–82 (2005)

Zhu K, Prince RL: Calcium and bone. *Clin Biochem* 45 (12), 936–42 (2012)

EXTRA

Neue S2k-Leitlinie: Divertikelkrankheit/Divertikulitis

Leifeld L, Germer CT et al.: S2k Leitlinie Divertikelkrankheit/Divertikulitis Gemeinsame Leitlinie der Deutschen Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechselkrankheiten (DGVS) und der Deutschen Gesellschaft für Allgemein- und Viszeralchirurgie (DGAV)

Weitere Informationen:
www.awmf.org/leitlinien/detail/II/021-020.html

WISSEN FÜR DIE PRAXIS

Margarine – das natürliche Kunst-Produkt Literatur:

aid infodienst e. V.: Speisefette. Bonn, Bestell-Nr. 1012 (2014)

Persönliche Mitteilungen

<http://www.bernd-leitenberger.de/butter-margarine.shtml>

<http://www.biosicherheit.de/lexikon/818.fetthaertung.html>

http://books.google.de/books?id=WSoEqc3-xlYc&pg=PA167&pg=PA167&dq=niederl%C3%A4ndischer+Butterh%C3%A4ndler+jurgens&source=bl&ots=iOVb-cPQGI&sig=OtSCFhPw21qop_iLn-wZS9l_k7vQ&hl=de&sa=X&ei=eXnPU6avAsnG7AadlYC4BA&ved=0CD0Q6AEwBw#v=onepage&q=niederl%C3%A4ndischer%20Butterh%C3%A4ndler%20jurgens&f=false

http://www.dgfett.de/history/normann/nr_blank.php

http://www.dgfett.de/history/normann/nr_fiedler.php

<http://dirk-schindelbeck.de/archives/5121>

http://link.springer.com/chapter/10.1007%2F978-3-662-08283-6_13#page-1

http://www.margarine.at/at/art/downloads/fachinformationen/Margarine_in_Oesterreich.pdf

<http://www.marken-history.de/marken/u-marken/unilever.html>

<http://www.niederrhein-blick.de/id40.htm>

<https://www.walter-rau.de/de/41/Produktion>

<http://www.was-wir-essen.de/abisz/margarine.php>

<http://de.wikipedia.org/wiki/Margarine>

http://de.wikipedia.org/wiki/Napoleon_III.

<http://www.todayifoundout.com/index.php/2013/12/napoleon-invention-margarine/>

<http://suite101.de/article/eine-kleine-geschichte-der-margarine-a63842#.U86KFWelqUk>

Stellungnahme zu einer ketogenen und kohlenhydratarmen Diät bei Krebs

Klinische Studien:

Eine retrospektive Untersuchung an fünf Kindern mit tuberöser Sklerose, die eine ketogene Diät zur Anfallsprophylaxe einhielten, konnte anhand einer retrospektiven Auswertung der Bildgebung keinen Hinweis auf eine positive Beeinflussung des Tumorzustands zeigen [1].

Ein Fallbericht beschreibt zwei Kinder mit Hirntumoren, bei denen unter ketogener Diät die Glukoseaufnahme in einer kombinierten Positronen-Emissions-Tomographie/Computertomographie (PET/CT) abnahm. Ein Mädchen überlebte mehrere Monate ohne Progress [2].

In einer Untersuchung bei fünf Patienten mit fortgeschrittener Tumorkachexie wurde eine enterale Sondenkost mit isokalorischer ketogener Diät gegeben. Aussagen zum Einfluss auf die Kachexie oder den Tumorverlauf waren nicht möglich [3].

Die Arbeitsgruppe um Kämmerer und Otto publizierte eine Pilotstudie mit 16 Patienten mit einer weit fortgeschrittenen Krebser-

krankung, die über mindestens sechs Wochen eine Diät mit maximal 70 g KH/d erhielten. Zwei Patienten verstarben in Woche 2 und 5, drei schieden wegen Inakzeptanz/aus persönlichen Gründen aus, drei Patienten schieden wegen Progress aus (e19). Eine Aussage zu einer möglichen Beeinflussung des Krankheitsverlaufs ist aufgrund dieser Daten nicht möglich. Bei den fünf Patienten, die die Therapie bis zum Ende der Studie durchführten und bei einem Patienten, der wieder eine Chemotherapie aufnahm, berichten die Autoren von einer Verbesserung der emotionalen Funktion in der Lebensqualität und weniger Schlafstörungen. Andere Funktionsbereiche der Lebensqualität blieben stabil oder verschlechterten sich. Die Autoren führen dies auf die fortgeschrittene Tumorerkrankung zurück. Als Nebenwirkungen werden Fatigue und Obstipation beschrieben [4].

ERGO-Studie: In dieser Pilotstudie von Rieger und Steinbach erhielten 20 Patienten mit rezidiviertem Glioblastom eine ketogene Diät. Die Autoren berichten über keine schwerwiegenden Nebenwirkungen. Drei Patienten beendeten die Diät allerdings wegen schlechter Tolerabilität. Ein Patient erreichte ein geringes Anspre-

chen (minor response) und zwei Patienten eine stabile Erkrankung über sechs Wochen. Das mediane progressionsfreie Überleben aller Patienten lag bei fünf Wochen (range 3–13), das mediane Gesamtüberleben nach Studieneinschluss bei 32 Wochen. Die Autoren schlussfolgern, dass die ketogene Diät durchführbar und sicher ist, aber wahrscheinlich keine signifikante klinische Aktivität in dieser Krankheitsituation aufweist [5].

Fine et al. beschreiben eine Gruppe von zwölf Patienten mit fortgeschrittenen Tumorerkrankungen und positiven Befunden in einer Positronen-Emissions-Tomographie (PET). In dieser Untersuchung wurden Patienten mit vorangehendem Gewichtsverlust ausgeschlossen, der BMI musste mindestens bei 20 kg/qm-Körpergewicht liegen. Die Kohlenhydratzufuhr wurde auf fünf Prozent der Gesamtenergiezufuhr beschränkt. Zehn Patienten führten diese Ernährungsform für 26 bis 28 Tage durch. Die Autoren berichten, dass es zu keinen Nebenwirkungen kam. Allerdings nahm die Kalorienzufuhr um 35 +/- 6 Prozent gegenüber der Ausgangsbasis ab und das Gewicht nahm im Durchschnitt um vier Prozent (0,0–6,1 %) ab. Der Tumorverlauf wurde mittels PET gemessen. Fünf von neun Patienten mit zuvor rascher Tumorprogression zeigten in den vier Wochen einen stabilen Krankheitsverlauf oder eine partielle Remission. Bei diesen Patienten war die Ketose deutlicher ausgeprägt als bei den vier anderen Patienten mit einer progressiven Erkrankung. Da die ketogene Diät zu einer Veränderung des Stoffwechsels der Tumorzellen führen soll, ist allerdings die Frage zu stellen, ob das PET, das die Glukoseaufnahme misst, der geeignete Verlaufsparameter ist. Klinische Parameter oder radiologische Größenmessungen werden in der Publikation nicht mitgeteilt [6].

Raffaghelto et al. fassen in ihrem Artikel Grundüberlegungen zur kurzzeitigen Kalorienrestriktion vor einer Chemotherapie mit dem Ziel der Verminderung der Nebenwirkungen zusammen. In einem kurzen Absatz wird berichtet, dass sechs Patienten entweder mit oder ohne Fasten vor der Chemotherapie beobachtet wurden und dass es während des Fastens zu einer Reduktion von Fatigue, Schwäche und gastrointestinalen Nebenwirkungen gekommen sei [7].

Schröder et al. berichten über elf Patienten mit Kopf-Hals-Tumoren, bei denen unter ketogener Diät die Spiegel von Glukoselaktat, Pyruvat und Harnstoff im Blut und im Tumor im Verlauf der Erkrankung gemessen wurden. Im Tumor kommt es zu einer Laktatabnahme. Die Autoren berichten jedoch über eine stabile oder erhöhte Konzentration von Pyruvat und Glukose. Angaben zum klinischen Verlauf werden nicht gemacht [8].

[1] Chu-Shore CJ, Thiele EA: Tumor growth in patients with tuberous sclerosis complex on the ketogenic diet. *Brain Dev* 32 (4), 318–22 (2010). Epub 2009 May 13

[2] Nebeling LC, Miraldi F, Shurin SB, Lerner E: Effects of a ketogenic diet on tumor metabolism and nutritional status in pediatric oncology patients: two case reports. *J Am Coll Nutr* 14 (2), 202–8 (1995)

[3] Fearon KC, Borland W, Preston T, Tisdale MJ, Shenkin A, Calman KC: Cancer cachexia: influence of systemic ketosis on substrate levels and nitrogen metabolism. *Am J Clin Nutr* 47 (1), 42–8 (1988)

[4] Schmidt M, Pfetzer N, Schwab M, Strauss I, Kämmerer U: Effects of a ketogenic diet on the quality of life in 16 patients with advanced cancer: A pilot trial. *Nutr Metab* 8 (1), 54 (2011)

[5] Rieger J, Baehr O, Maurer GED, Hattingen E, Franz K, Brucker D, Walenta S, Kaemmerer U, Coy JF, Weller M, Steinbach JP: ERGO: A pilot study of ketogenic diet in recurrent glioblastoma. *Int J Oncology*, DOI: 10.3892/ijo.2014.2382

[6] Fine E, Segal-Isaacson CJ, Feinman R, Herszkopf S, Romano M, Tomuta N et al.: Targeting insulin inhibition as a metabolic therapy in advanced cancer: A pilot safety and feasibility dietary trial in 10 patients. *Nutrition* 28 (10), 1028–1035 (2012)

[7] Raffaghelto L, Safdie F, Bianchi G, Dorff T, Fontana L, Longo VD: Fasting and differential chemotherapy protection in patients. *Cell Cycle* 9, 22–23 (2010)

[8] Schroeder U, Himpe B, Pries R, Vontheim R, Nitsch S, Wollenberg B: Decline of Lactate in tumor tissue after ketogenic diet: in vivo of microdialysis study in patients with head and neck cancer. *Nutrition and Cancer* 65 (6), 843–849 (2013)

NEUES AUS DER FORSCHUNG

„Fünf am Tag“ senkt das Sterberisiko

Deutsche Gesellschaft für Ernährung (DGE; Hrsg.): Gemüse und Obst in der Prävention ausgewählter chronischer Krankheiten. Bonn (2012); www.dge.de/pdf/ws/DGE-Stellungnahme-Gemuese-Obst-2012.pdf

Presseinformation der Deutschen Gesellschaft für Ernährung (DGE): Ein hoher Gemüse- und Obstverzehr fördert die Gesundheit. DGE stellt wissenschaftliche Datenlage vor. 01/2012 vom 12. Juni www.dge.de/pdf/presse/2012/DGE-Pressmeldung-AdW-01-2012-Gemuese-Obst.pdf

Wang X, Ouyang Y, Liu J, Zhu M, Zhao G, Bao W, Hu FB: Fruit and vegetable consumption and mortality from all causes, cardiovascular disease, and cancer: systematic review and dose-response meta-analysis of prospective cohort studies. *BMJ* 349 (Jul 29), g4490 (2014)

Süßstoff lässt Blutzuckerspiegel steigen

Suez J et al.: Artificial sweeteners induce glucose intolerance by altering the gut microbiota. *Nature*, DOI: 10.1038/nature13793

Link:
Weizmann Institute of Science, Department of Immunology: <http://www.weizmann.ac.il/immunology/>

Tägliches Frühstück senkt Diabetesrisiko für Kinder

Donin AS et al.: Regular breakfast consumption and type 2 diabetes risk markers in 9- to 10-year-old children in the child heart and health study in England (CHASE): A cross-sectional analysis. *PLoS Medicine*, DOI: 10.1371/journal.pmed.1001703

Link:
St. George's University of London, Population Health Research Institute: <http://www.sgul.ac.uk/research/population-health/population-health/?searchterm=Population>

WUNSCHTHEMA

Augenerkrankungen und Ernährung

Brinkmann I: Augenvitamine bei Makuladegeneration: Lutein + Zeaxanthin statt β -Carotin? Medscape Deutschland vom 24. Februar 2014

Damms T, Guzek B: Kurzlehrbuch Augenheilkunde. Urban & Fischer-Verlag (2014)

DGE: Stellungnahme – Gemüse und Obst in der Prävention ausgewählter chronischer Krankheiten (2012)

Feltgen N; Zeitz F: Vaskuläre Netzhauterkrankungen als Spiegel generalisierter Gefäßveränderungen. *Der Ophthalmologe* 111, 10–14 (2014)

Gerste ND: Blindheit – Folge von Armut und Unkenntnis. *Deutsches Ärzteblatt* vom 8. Oktober 2010

Gerste RD: Hoffnungsträger für AMD-Patienten: Antioxidantien in der Nahrung oder der Nahrungsergänzung. *Z prakt Augenheilkd* 33, 497–499 (2012)

Grehn F: Augenheilkunde. 31. Aufl., Springer Verlag, Berlin (2012)

Großklaus R, Henning KJ: Vitamine für das Auge? *Der Ophthalmologe* 106, 521–526 (2009)

Hatz K, Prünke C: Retinale Venenverschlüsse. *Schweiz Med Forum* 22 (8), 170–174 (2012)

Kernt M: Bessere Aussichten bei altersbedingter Makuladegeneration. *MMW-Fortschr Med* 155, 43–45 (2013)

Kohlen S: Der Augeninfarkt (2012), http://www.augen-acc.de/fileadmin/user_upload/pdf/Augeninfarkt_2.12.pdf

Küllenberg B, Goertz W: Augen-Sprechstunde. Springer-Verlag, Berlin (2011)

Lang SJ: Visusminderung durch multiple fleckförmige, weißliche Veränderungen. *Z Prakt Augenheilkd* 35, 27–29 (2014)

Mirshahi A, Feltgen N, Hansen LL, Hattenbach L-O: Gefäßverschlüsse der Netzhaut: Eine interdisziplinäre Herausforderung. *Dtsch Arztebl* 105 (26), 474–9 (2008)

Schleicher M, Weikel K, Garber C, Taylor A: Diminishing risk for age-related macular degeneration with nutrition: A current view. *Nutrients* 5, 2405–56 (2013)

Schmetterer L: Was bedeuten die Ergebnisse von AREDS 2 für die Praxis? *Z prakt Augenheilkd* 35 (Suppl 1) 1–2 (2014)

Schweigert FJ, Reimann J: Mikronährstoffe und ihre Bedeutung für das Auge – Wirkungsweise von Lutein/Zeaxanthin und Omega-3-Fettsäuren. *Klein Monatsbl Augenheilkunde* 228, 537–43 (2011)

Seidel H; Stegemann E; Heiss C: Kardiovaskuläre und hämostaseologische Sicht retinaler Gefäßverschlüsse. *Ophthalmologe* 111, 23–30 (2014)

Wedrich A, Faschinger C, Schmut O: Mein Auge: Erkrankungen – Behandlungen – Informationen. Verlagshaus der Ärzte, Wien (2010)

ZWISCHENRUF

Der Tanz ums (un)gesättigte Fett

Afshin A, Micha R, Khatibzadeh S, Mozaffarian D: Consumption of nuts and legumes and risk of incident ischemic heart disease, stroke, and diabetes: a systematic review and meta-analysis. *Am J Clin Nutr* 100, 278–288 (2014)

Alexiadou K, Katsilambros N: Nuts: anti-atherogenic food? *Eur J Intern Med* 22, 141–6 (2011)

Astrup A: Yogurt and dairy product consumption to prevent cardiometabolic diseases: epidemiologic and experimental studies. *Am J Clin Nutr* 99 (5Suppl), 1235S–42S (2014)

Brown JM, Shelness GS, Rudel LL: Monounsaturated fatty acids and atherosclerosis: opposing views from epidemiology and experimental animal models. *Curr Atheroscler Rep* 9, 494–500 (2007)

Chowdhury R, Warnakula S, Kunutsor S, Crowe F, Ward HA, Johnson L, Franco OH, Butterworth AS, Forouhi NG, Thompson SG, Khaw KT, Mozaffarian D, Danesh J, Di Angelantonio E: Association of dietary, circulating, and supplement fatty acids with coronary risk: a systematic review and meta-analysis. *Ann Intern Med* 160, 398–406 (2014)

de Lorgeril M, Salen P, Martin JL, Mamelle N, Monjaud I, Touboul P, Delaye J: Effect of a mediterranean type of diet on the rate of cardiovascular complications in patients with coronary artery disease. Insights into the cardioprotective effect of certain nutrients. *J Am Coll Cardiol* 28, 1103–8 (1996)

de Lorgeril M, Salen P, Martin JL, Monjaud I, Delaye J, Mamelle N: Mediterranean diet, traditional risk factors, and the rate of cardiovascular complications after myocardial infarction: final report of the Lyon Diet Heart Study. *Circulation* 99, 779–85 (1999)

de Lorgeril M, Salen P: Diet as preventive medicine in cardiology. *Curr Opin Cardiol* 15, 364–70 (2000)

Deutsche Gesellschaft für Ernährung (DGE), Österreichische Gesellschaft für Ernährung (ÖGE), Schweizerische Gesellschaft für Ernährung (SGE), Schweizerische Vereinigung für Ernährung (SVE): Referenzwerte für die Nährstoffzufuhr. 5., korrig. Nachdruck, Neuer Umschau Buchverlag, Neustadt/Weinstraße (2013)

Deutsche Gesellschaft für Ernährung (Hrsg.): Evidenzbasierte Leitlinie. Fettkonsum und Prävention ausgewählter ernährungsmitbedingter Krankheiten. Version 206. <http://www.dge.de/pdf/ws/ll-fett/DGE-Leitlinie-Fett-11-2006.pdf>

DiNicolantonio JJ: The cardiometabolic consequences of replacing saturated fats with carbohydrates or Ω -6 polyunsaturated fats: Do the dietary guidelines have it wrong? *Open Heart* 1 (2014), DOI:10.1136/openhrt-2013-000032

Durrington PN, Bolton CH, Hartog M, Angelinetta R, Emmett P, Furniss S. Themeffect of a low-cholesterol, high-polyunsaturated diet on serum lipid levels, apolipoprotein B levels and triglyceride fatty acid composition. *Atherosclerosis* 27, 465–75 (1977)

- Eckel RH, Jakicic JM, Ard JD, de Jesus JM, Houston Miller N, Hubbard VS, Lee IM, Lichtenstein AH, Loria CM, Millen BE, Nonas CA, Sacks FM, Smith SC Jr, Svetkey LP, Wadden TA, Yanovski SZ, Kendall KA, Morgan LC, Trisolini MG, Velasco G, Whnek J, Anderson JL, Halperin JL, Albert NM, Bozkurt B, Brindis RG, Curtis LH, DeMets D, Hochman JS, Kovacs RJ, Ohman EM, Pressler SJ, Sellke FW, Shen WK, Smith SC Jr, Tomaselli GF: 2013 AHA/ACC guideline on lifestyle management to reduce cardiovascular risk: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Circulation* 129 (25 Suppl 2), S76–99 (2014)
- EFSA: Scientific opinion on dietary reference values for fats, including saturated fatty acids, polyunsaturated fatty acids, monounsaturated fatty acids, trans fatty acids, and cholesterol. *EFSA Journal* 8, 146 (2010)
- Elwood PC, Pickering JE, Givens DI, Gallacher JE: The consumption of milk and dairy foods and the incidence of vascular disease and diabetes: an overview of the evidence. *Lipids* 45, 925–39 (2010)
- Farvid MS, Ding M, Pan A, Sun Q, Chiuve SE, Steffen LM, Willett WC, Hu FB: Dietary Linoleic Acid and Risk of Coronary Heart Disease: A Systematic review and meta-analysis of prospective cohort studies. *Circulation* Aug 26 (2014). pii: CIRCULATIONAHA.114.010236. [Epub ahead of print] PubMed PMID: 25161045.
- German JB, Dillard CJ: Saturated fats: a perspective from lactation and milk composition. *Lipids* 45, 915–23 (2010)
- German JB, Dillard CJ: Saturated fats: what dietary intake? *Am J Clin Nutr* 80, 550–9 (2004)
- Harris WS, Shearer GC: Omega-6 fatty acids and cardiovascular disease: Friend or foe? *Circulation* Aug 26. (2014). pii: CIRCULATIONAHA.114.012534. [Epub ahead of print] PubMed PMID: 25161044
- Hegsted DM, McGandy RB, Myers ML, Stare FJ: Quantitative effects of dietary mfat on serum cholesterol in man. *Am J Clin Nutr* 17, 281–95 (1965)
- Hoenselaar R: Saturated fat and cardiovascular disease: the discrepancy between the scientific literature and dietary advice. *Nutrition* 28, 118–23 (2012)
- Jacobs DR Jr: What comes first: the food or the nutrient? Executive summary of a symposium. *J Nutr* 144 (4 Suppl), 543S–546S (2014)
- Jacobs DR, Tapsell LC: Food synergy: the key to a healthy diet. *Proc Nutr Soc* 72, 200–6 (2013)
- Jakobsen MU, O'Reilly EJ, Heitmann BL, Pereira MA, Bälter K, Fraser GE, Goldbourt U, Hallmans G, Knekt P, Liu S, Pietinen P, Spiegelman D, Stevens J, Virtamo J, Willett WC, Ascherio A: Major types of dietary fat and risk of coronary heart disease: a pooled analysis of 11 cohort studies. *Am J Clin Nutr* 89, 1425–32 (2009)
- Keys A (Hrsg.): Seven countries: a multivariate analysis of death and coronary heart disease. Cambridge, MA: Harvard University Press (1980)
- Keys A, Anderson JT, Grande F: Serum cholesterol in man: diet fat and intrinsic responsiveness. *Circulation* 19, 201–14 (1959)
- Kratz M, Baars T, Guyenet S: The relationship between high-fat dairy consumption and obesity, cardiovascular, and metabolic disease. *Eur J Nutr* 52, 1–24 (2013)
- Kuipers RS, de Graaf DJ, Luxwolda MF, Muskiet MH, Dijck-Brouwer DA, Muskiet FA: Saturated fat, carbohydrates and cardiovascular disease. *Neth J Med* 69, 372–8 (2011)
- Laake I, Pedersen JI, Selmer R, Kirkhus B, Lindman AS, Tverdal A, Veierød MB: A prospective study of intake of trans-fatty acids from ruminant fat, partially hydrogenated vegetable oils, and marine oils and mortality from CVD. *Br J Nutr* 108, 743–54 (2012)
- Lawrence GD: Dietary fats and health: dietary recommendations in the context of scientific evidence. *Adv Nutr* 4, 294–302 (2013)
- Lemaitre RN, King IB, Mozaffarian D, Sotoodehnia N, Rea TD, Kuller LH, Tracy RP, Siscovick DS: Plasma phospholipid trans fatty acids, fatal ischemic heart disease, and sudden cardiac death in older adults: the cardiovascular health study. *Circulation* 114, 209–15 (2006)
- Malhotra A: Saturated fat is not the major issue. *BMJ* 347, f6340 (2013)
- Mariotti S, Capocaccia R, Farchi G, Menotti A, Verdecchia A, Keys A: Differences in the incidence rate of coronary heart disease between north and south European cohorts of the Seven Countries Study as partially explained by risk factors. *Eur Heart J* 3, 481–7 (1982)
- Mensink RP, Katan MB: Effect of dietary trans fatty acids on high-density and low-density lipoprotein cholesterol levels in healthy subjects. *N Engl J Med* 323, 439–45 (1990)
- Mensink RP, Zock PL, Kester AD, Katan MB: Effects of dietary fatty acids and carbohydrates on the ratio of serum total to HDL cholesterol and on serum lipids and apolipoproteins: a meta-analysis of 60 controlled trials. *Am J Clin Nutr* 77, 1146–55 (2003)
- Mozaffarian D, Micha R, Wallace S: Effects on coronary heart disease of increasing polyunsaturated fat in place of saturated fat: a systematic review and meta-analysis of randomized controlled trials. *PLoS Med* 7, e1000252 (2010)
- Ramsden CE, Zamora D, Leelarthaeapin B, Majchrzak-Hong SF, Faurot KR, Suchindran CM, Ringel A, Davis JM, Hibbeln JR: Use of dietary linoleic acid for secondary prevention of coronary heart disease and death: evaluation of recovered data from the Sydney Diet Heart Study and updated meta-analysis. *BMJ* 346, e8707 (2013)
- Renaud S, Gautheron P: Influence of dietary fats on atherosclerosis, coagulation and platelet phospholipids in rabbits. *Atherosclerosis* 21, 115–24 (1975)
- Rizos EC, Ntzani EE, Bika E, Kostapanos MS, Elisaf MS: Association between omega-3 fatty acid supplementation and risk of major cardiovascular disease events: a systematic review and meta-analysis. *JAMA* 308, 1024–33 (2012)
- Sun Q, Ma J, Campos H, Hankinson SE, Manson JE, Stampfer MJ, Rexrode KM, Willett WC, Hu FB: A prospective study of trans fatty acids in erythrocytes and risk of coronary heart disease. *Circulation* 115, 1858–65 (2007)
- Volek JS, Phinney SD, Forsythe CE, Quann EE, Wood RJ, Puglisi MJ, Kraemer WJ, Bibus DM, Fernandez ML, Feinman RD: Carbohydrate restriction has a more favourable impact on the metabolic syndrome than a low fat diet. *Lipids* 44, 297–309 (2009)
- Wang Q, Imamura F, Lemaitre RN, Rimm EB, Wang M, King IB, Song X, Siscovick D, Mozaffarian D: Plasma phospholipid trans-fatty acids levels, cardiovascular diseases, and total mortality: the cardiovascular health study. *J Am Heart Assoc* 3 (2014). pii: e000914. doi: 10.1161/JAHA.114.000914. PubMed PMID: 25164946
- Willett WC: Dietary fats and coronary heart disease. *J Intern Med* 272, 13–24 (2012)
- Willett WC: The Mediterranean diet: science and practice. *Public Health Nutr* 9, 105–10 (2006)

TRENDSCOUT LEBENSMITTEL

Seniorenverpflegung

aid Infodienst Verbraucherschutz, Ernährung, Landwirtschaft e. V.: Essen und Trinken im Alter. Ratgeber für Pflegekräfte, Bestellnummer 3667, Bonn (2014)

Biedermann M et al.: smoothfood – 5 Sterne für die Heimküche. Lambertus-Verlag, Freiburg (2010)

Bundesarbeitsgemeinschaft der Senioren-Organisationen (BAGSO): Für einen gesunden Lebensstil im Alter: Parlamentarischer Staatssekretär Dr. Gerd Müller und BAGSO-Vorsitzende Prof. Ursula Lehr stellen neue „IN FORM MitMachBox“ vor. Pressemitteilung vom 17.01.2012

Bundesministerium für Gesundheit: Ambulante Pflege: Senioren-Wohngemeinschaft, www.bmg.bund.de, abgerufen am 26.08.2014

Deutsche Gesellschaft für Ernährung e. V.: 12. Ernährungsbericht 2012. Bonn (2012)

Deutsche Gesellschaft für Ernährung e. V.: DGE-Qualitätsstandards für Essen auf Rädern. Bonn (2011)

Deutsche Gesellschaft für Ernährung e. V.: Essen und Trinken bei Kau- und Schluckstörungen im Alter. Bonn (2014)

Grohmann U: Senioren in der Gemeinschaftsverpflegung. Ernährungs-Umschau 2 (2014)

Holtorf R, Deutsche Gesellschaft für Ernährung e. V.: Gespräch am 25.08.2014

IN FORM: Interview mit der Qualitätsmanagementbeauftragten Michaela Gessner, www.inform-dge.de, abgerufen am 21.08.2014

Kompetenzzentrum für Ernährung (KErn): Preisträger gesund.gekocht.gewinnt 2012. Freising (2012)

Mertens-Zündorf G, Bundesarbeitsgemeinschaft der Senioren-Organisationen (BAGSO): Gespräch am 5.08.2014

Sichau I: Eigenregie plus Service. gv-Praxis 5 (2014)

Sichau I: Senioren-WG. gv-Praxis 6 (2013)

Statistisches Bundesamt: Pflegestatistik 2011. Wiesbaden 2013

Schwartau S, Verbraucherzentrale Hamburg: Gespräch am 22.08.2014

Thalhammer M, biozoon Food Innovations GmbH: Gespräch am 07.08.2014

Tschech M, apetito AG Rheine: Statement vom 14.08.2014

Verbraucherzentrale Hamburg: Bericht zum Markt-Check Essen auf Rädern – neuer Qualitätsstandard erst in Einzelfällen erreicht. Hamburg (2012)

Verbraucherzentrale NRW e. V.: Essen auf Rädern: Auswahlkriterien für einen mobilen Menüdienst. www.vz-nrw.de, abgerufen am 21.08.2014

ERNÄHRUNGSPSYCHOLOGIE

Werkzeugkoffer Ernährungsberatung: Humanistische Ansätze

Freud S: Das Unbehagen in der Kultur. Studienausgabe. Band IX. Fischer, Frankfurt (1982)

Freud S: Totem und Tabu. Studienausgabe. Band IX. Fischer, Frankfurt (1982)

Skinner BF: Futurum Zwei (Walden two). Wegner, Hamburg (1970)