Simone Hörrlein

Fit oder krank durch Milch?

Ein Lebensmittel in der Diskussion

Sie enthalten wertvolle Proteine, viele wichtige Vitamine und sind hinsichtlich ihrer Kalziummenge von kaum einem anderen Lebensmittel zu schlagen. Die Rede ist von Milch und Milcherzeugnissen. Diese ernährungsphysiologisch wertvollen Grundnahrungsmittel sind seit fast 8000 Jahren wichtiger Bestandteil der menschlichen Ernährung und haben unserer Spezies einen enormen Entwicklungsschub ermöglicht. In jüngster Zeit häufen sich Vorwürfe, die Milch mit diversen Krankheiten in Verbindung bringen und sogar vor ihrem Verzehr warnen. Was steckt hinter dieser emotional geführten Diskussion – Eigeninteressen, clevere Marketingstrategien oder vielleicht doch wissenschaftliche Fakten?
Das Kompetenzzentrum für Ernährung (KErn) hat sich mit Unterstützung des Max Rubner-Instituts einen Überblick über die Behauptungen und die wissenschaftliche Datenlage verschafft.

These 1: Milch erhöht das Risiko für Herzkreislauf-Erkrankungen.

Gesättigte Fettsäuren gehen tatsächlich mit einem erhöhten Erkrankungsrisiko für Herzkreislauf-Erkrankungen (HKE) einher, da sie das LDL-Cholesterin im Blut erhöhen. Da Männer rund 22 und Frauen etwa 26 Prozent aller gesättigten Fette über Milch und Milchprodukte aufnehmen (*MR 2012*), wurde der Verzehr fettreicher Milcherzeugnisse auch mit einem erhöhten Krankheitsrisiko in Verbindung gebracht. Diese Einschätzung ist heute nicht mehr zeitgemäß, da die physiologische Wirkung gesättigter Fette immer unter Berücksichtigung der jeweiligen Lebensmittelmatrix erfolgen muss. Neuere Studien ermöglichen eine aktualisierte Bewertung des Milchfetts. Demnach führt der Verzehr von Milch und Milchprodukten nicht zu einem erhöhten Risiko für HKE, es gibt eher Hinweise auf eine inverse Assoziation *(Elwood 2010, Gibson 2009, Patterson 2013, Abreu 2014, Bel-Serrat 2013)*.

These 2: Milch macht dick und erhöht das Risiko für Diabetes.

Adipositas ist weltweit ein ernstzunehmendes Problem *(World Health Organization 2014)* und ein Risikofaktor für Typ-2-Diabetes sowie andere Stoffwechselerkrankungen. Seriöse Studien zeigen aktuell keinen konsistenten Zusammenhang zwischen Milchverzehr und den genannten Krankheitsbildern *(Gao 2013, Elwood 2010, Tong 2011, Aune 2013, Louie 2011)*. Jüngere Analysen weisen auf eine inverse Assoziation hin *(Mozaffarian 2013, Fumeron 2011, Zong 2014,O'Connor 2014)*. In verschie-

denen Interventionsstudien führte vermehrter Verzehr von Milcherzeugnissen nicht zu negativen Auswirkungen auf das Körpergewicht. Bei gleichzeitiger Energierestriktion ließ sich ein Rückgang von Körpergewicht und Körperfettmasse beobachten *(Abargouei 2012, Chen 2012)*.

These 3: Milch führt zu Verschleimung.

Die Schleimbildung ist ein elementarer Prozess der Schleimhäute und für deren Funktion wichtig. Kommt Milch mit dem Speichel in Kontakt, flocken Milchproteine aus und die Viskosität des Speichels erhöht sich. Dies könnte man als vermehrte Schleimbildung interpretieren. Im 12. Jahrhundert empfahlen Ärzte Asthma-Patienten auf Milchprodukte zu verzichten. Dieser Mythos ist in nichtwissenschaftlichen Publikationen und Ernährungsschriften noch immer präsent. Heilpraktiker und die chinesische Medizin leisten seiner Verbreitung weiterhin Vorschub *(Thiara 2012)*, obwohl eine in den 1990er-Jahren durchgeführte randomisierte Doppelblindstudie diese Legende längst widerlegt hat. Demnach unterscheiden sich Sojamilch und Kuhmilch hinsichtlich der empfundenen Schleimbildung nicht signifikant (*Wanders 2011*). Auch die Verschlechterung von Erkältungs- und Schnupfensymptomen ließ sich in diversen Studien nicht bestätigen (*Pinnock 1990, Pinnock 1993, Arney 1993*).

These 4: Milch fördert Osteoporose.

Zahlreiche Studien bestätigen eine Erhöhung der Knochenmasse durch Milchverzehr (*Budek 2007, Huncharek 2008, Moore 2008, Kalkwarf 2003*). Das komplexe Krankheitsbild der Osteoporose kann Kalzium (aus Milch, Gemüse oder Mineralwasser) weder verhindern noch fördern (*Bischoff-Ferrari 2011, Kanis 2005, Feskanich 2014, Darling 2009*). Dass Osteoporose in Ländern mit höherem Milchkonsum häufiger auftritt als in Ländern ohne Milchverzehr hat vielfältige Gründe. Der Milchverzehr an sich ist kein Grund. Osteoporose tritt – von Ausnahmen abgesehen – vor allem im Alter auf. Auf Grund der höheren Lebenserwartung ist das Krankheitsbild in westlichen Nationen weiter verbreitet. Daneben spielen Faktoren wie Körpergröße, Gewicht, Muskelmasse, geographische Lage eines Landes (endogene Vitamin-D-Synthese) sowie die Ethnizität eine Rolle (*Bonjour 2013, Rizzoli 2014*). Asiaten zum Beispiel haben eine andere Skelett-Geometrie, die das Risiko für Hüftfrakturen senkt, das Risiko für Brüche der Wirbelsäule jedoch erhöht (*Heaney 2002*). Afroamerikaner weisen eine veränderte Mikroarchitektur von Oberschenkelknochen und Speiche auf, was trotz niedrigerer Kalzium-Zufuhr zu einem geringeren Frakturrisiko beiträgt (*Putman 2013*).

These 5: Milch führt zu Übersäuerung des Körpers.

Das Gerücht, dass Milch zur Übersäuerung des Organismus beiträgt, hält sich hartnäckig. Man begründet es mit zwei bereits widerlegten Argumenten: mit dem durch Lebensmittel beeinflussbaren Säuren-Basen-Gleichgewicht im Körper sowie mit den in Milch in größeren Mengen vorhandenen Phosphoproteinen und schwefeligen Aminosäuren (*Calvez 2012, Bonjour 2013*). Zwar führt ein zu hoher Proteinverzehr zu einer verringerten Kalzium-Rückresorption in der Niere und in der Folge zu einer erhöhten Kalzium-Ausscheidung im Urin (*Calvez 2012, Fenton 2011, Thorpe 2011*). Entscheidend ist jedoch die Differenz zwischen Kalzium-Aufnahme über die Nahrung und Kalzium-Ausscheidung. Die erhöhte Kalzium-Ausscheidung im Urin geht mit einer erhöhten Kalzium-Absorption im Darm oder mit einer reduzierten Kalzium-Ausscheidung über den Stuhl einher. Die Kalzium-Bilanz insgesamt bleibt ausgeglichen (*Calvez 2012, Thorpe 2011, Remer 2014*). Zahlreiche neuere Studien bestätigen, dass Nahrungsproteine die Kalzium-Bilanz nicht negativ beeinflussen (*Darling 2009, Beasley 2014*). Eine aktuelle prospektive Studie aus den USA *(Women's Health Initiative)* hat 144.589 Frauen über 50 Jahre mindestens 13 Jahre lang beobachtet und fand eine verbesserte Knochendichte bei höherer Proteinzufuhr.

These 6: Milch führt zu Akne.

In Europa zeigen bis zu 80 Prozent der Jugendlichen Symptome von Akne (*Rzany 2006, Zubair 2011*). Das Auftreten von Akne wird einerseits mit dem hohen glykämischen Index bestimmter Lebensmittel, andererseits mit einer hohen Aufnahme von Milch und Milchprodukten in Verbindung gebracht (*Melnik 2012, Spencer 2009, Veith 2011*). Als auslösende Inhaltsstoffe in Milch gelten Hormone sowie insulinähnliche Wachstumsfaktoren (*Melnik*

Übersicht 1: Zusammenhang zwischen dem Verzehr von Milch und Milchprodukten und Krankheitsrisiken *(KErn 2014)*

Krankheiten	Inverse Assoziation	Positive Assoziation	Keine Assoziation
Kardiovaskuläre Erkrankungen	X		
Herz-Kreislauf-Erkrankungen[1]			X
Schlaganfall[1]			X
Bluthochdruck	X		
Diabetes mellitus Typ 2	X		
Metabolisches Syndrom[1]			X
Adipositas			X
Krebs	Dickdarm X Brustkrebs (1. Hinweise) X	Prostata X	Übrige Organe X
Knochendichte		X	
Osteoporose			X
Verschleimung			X
Akne[1]			X
Übersäuerung			X

[1]Bei diesen Krankheiten ist die wissenschaftliche Datenlage noch nicht hinreichend geklärt, aktuelle Studien sprechen bisher gegen eine Risikoerhöhung.

2009). Trotz der schlüssigen Hypothesen zu dieser Thematik fehlen bis heute kontrollierte Studien zum kausalen Zusammenhang zwischen dem Verzehr von Milch und Milchprodukten und dem Auftreten von Akne (*Bhate 2014*).

These 7: Kuhmilch ist artfremde Milch. Der Mensch verträgt sie nicht.

Dass Kuhmilch an das Kalb adaptiert sei und der Mensch sie als artfremde Milch nicht vertrage, ist ein weit verbreitetes Argument der Milchgegner. In letzter Konsequenz bedeutet es, dass der Mensch kaum Lebensmittel zur Verfügung hätte. Denn auch Früchte dienen primär zur Fortpflanzung von Bäumen und Sträuchern und Körner zur Verbreitung von Getreide. Keine Pflanze und kein Tier entstanden primär zum Verzehr des Menschen.
Bis zu 15 Prozent der deutschen Bevölkerung vertragen Milch nicht gut, da sie an einer Laktoseintoleranz leiden. Diese Intoleranz geht auf einen Mangel oder eine geringere Aktivität des Milchzucker-spaltenden Enzyms Laktase zurück und hat nichts mit einer potenziell gefährlichen Milchproteinallergie zu tun, die eher selten vorkommt.

Fazit

Trotz zahlreicher Studien, die die Vorteile des Milchverzehrs bestätigen, wird es stets auch Kritiker und Andersdenkende geben. Milch und Milcherzeugnisse und ihre Bestandteile sind aus aktueller wissenschaftlicher Sicht nährstoffreiche und ernährungsphysiologisch wertvolle Lebensmittel, die Bestandteil einer ausgewogenen und abwechslungsreichen Ernährung sein sollten. Zahlreiche Vorwürfe gegen Milch sind wissenschaftlich nicht gesichert und wurden in jüngster Zeit revidiert (vgl. Literaturanhang).

Die Autorin

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Literatur

(1) Hoffmann, W., Römpp-Redaktion, and H. Meisel, Römpp - Milch Online. Georg Thieme Verlag KG.

(2) Rudloff, S. and C. Kunz, Milk oligosaccharides and metabolism in infants. Adv Nutr, 2012. 3(3): p. 398s-405s.

(3) Albrecht, S., et al., A comparative study of free oligosaccharides in the milk of domestic animals. Br J Nutr, 2014. 111(7): p. 1313-28.

(4) Sundekilde, U.K., et al., Natural variability in bovine milk oligosaccharides from Danish Jersey and Holstein-Friesian breeds. J Agric Food Chem, 2012. 60(24): p. 6188-96.

(5) Izco, J.M., M. Tormo, and R. Jimenez-Flores, Rapid simultaneous determination of organic acids, free amino acids, and lactose in cheese by capillary electrophoresis. J Dairy Sci, 2002. 85(9): p. 2122-9.

(6) Lorenzen, P.C., et al., Activities of alkaline phosphatase, γ-glutamyltransferase and lactoperoxidase in cow, sheep and goat's milk in relation to heat treatment. Small Ruminant Research, 2010. 89(1): p. 18-23.

(7) Regal, P., A. Cepeda, and C. Fente, Development of an LC-MS/MS method to quantify sex hormones in bovine milk and influence of pregnancy in their levels. Food Addit Contam Part A Chem Anal Control Expo Risk Assess, 2012. 29(5): p. 770-9.

(8) Key, T.J., Diet, insulin-like growth factor-1 and cancer risk. Proc Nutr Soc, 2011: p.1-4.

(9) Kang, S.H., et al., The effects of dairy processes and storage on insulin-like growth factor-I (IGF-I) content in milk and in model IGF-I-fortified dairy products. J Dairy Sci, 2006. 89(2): p. 402-9.

(10) Donovan, S.M., et al., Orally administered iodinated recombinant human insulin- like growth factor-I (125I-rhIGF-I) is poorly absorbed by the newborn piglet. J Pediatr Gastroenterol Nutr, 1997. 24(2): p. 174-82.

(11) Mero, A., et al., IGF-I, IgA, and IgG responses to bovine colostrum supplementation during training. J Appl Physiol (1985), 2002. 93(2): p. 732-9.

(12) Hellgren, L.I., Phytanic acid--an overlooked bioactive fatty acid in dairy fat? Ann N Y Acad Sci, 2010. 1190: p. 42-9.

(13) Allen, N.E., et al., Phytanic acid: measurement of plasma concentrations by gas- liquid chromatography-mass spectrometry analysis and associations with diet and other plasma fatty acids. Br J Nutr, 2008. 99(3): p. 653-9.

(14) Leiber, F., et al., A study on the causes for the elevated n-3 fatty acids in cows' milk of alpine origin. Lipids, 2005. 40(2): p. 191-202.

(15) Vetter, W. and M. Schröder, Concentrations of phytanic acid and pristanic acid are higher in organic than in conventional dairy products from the German market. Food Chemistry, 2010. 119(2): p. 746-752.

(16) Gloerich, J., et al., A phytol-enriched diet induces changes in fatty acid metabolism in mice both via PPARalpha-dependent and -independent pathways. J Lipid Res, 2005. 46(4): p. 716-26.

(17) Hashimoto, T., et al., Polyunsaturated fats attenuate the dietary phytol-induced increase in hepatic fatty acid oxidation in mice. J Nutr, 2006. 136(4): p. 882-6.

(18) Wanders, R.J., J. Komen, and S. Ferdinandusse, Phytanic acid metabolism in health and disease. Biochim Biophys Acta, 2011. 1811(9): p. 498-507.

(19) Atshaves, B.P., et al., Liver fatty acid-binding protein gene ablation inhibits branched-chain fatty acid metabolism in cultured primary hepatocytes. J Biol Chem, 2004. 279(30): p. 30954-65.

(20) Che, B.N., et al., Phytanic acid stimulates glucose uptake in a model of skeletal muscles, the primary porcine myotubes. Lipids Health Dis, 2013. 12: p. 14.

(21) Wright, M.E., et al., Serum phytanic and pristanic acid levels and prostate cancer risk in Finnish smokers. Cancer Med, 2014.

(22) Kratz, M., T. Baars, and S. Guyenet, The relationship between high-fat dairy consumption and obesity, cardiovascular, and metabolic disease. Eur J Nutr, 2013. 52(1): p. 1-24.

(23) Hu, F.B. and W.C. Willett, Optimal diets for prevention of coronary heart disease. Jama, 2002. 288(20): p. 2569-78.

(24) Lewington, S., et al., Blood cholesterol and vascular mortality by age, sex, and blood pressure: a meta-analysis of individual data from 61 prospective studies with 55,000 vascular deaths. Lancet, 2007. 370(9602): p. 1829-39.

(25) Huth, P.J. and K.M. Park, Influence of dairy product and milk fat consumption on cardiovascular disease risk: a review of the evidence. Adv Nutr, 2012. 3(3): p. 266-85.

(26) Hjerpsted, J., E. Leedo, and T. Tholstrup, Cheese intake in large amounts lowers LDL-cholesterol concentrations compared with butter intake of equal fat content. Am J Clin Nutr, 2011. 94(6): p. 1479-84.

(27) de Goede, J., et al., Cheese Consumption and Blood Lipids; a Systematic Review and Meta-analysis of Randomized Controlled Trials. Circulation, 2014. 129: p. AMP66. (28) Astrup, A., Yogurt and dairy product consumption to prevent cardiometabolic diseases: epidemiologic and experimental studies. Am J Clin Nutr, 2014. 99(5 Suppl): p. 1235s-42s.

(29) Djousse, L., Is plasma pentadecanoic acid a reasonable biomarker of dairy consumption? J Am Heart Assoc, 2013. 2(4): p. e000393.

(30) Mozaffarian, D., et al., trans-Palmitoleic acid, other dairy fat biomarkers, and incident diabetes: the Multi-Ethnic Study of Atherosclerosis (MESA). Am J Clin Nutr, 2013. 97(4): p. 854-61.

(31) Mozaffarian, D., et al., Trans-palmitoleic acid, metabolic risk factors, and new-onset diabetes in U.S. adults: a cohort study. Ann Intern Med, 2010. 153(12): p. 790-9.

(32) de Oliveira Otto, M.C., et al., Biomarkers of dairy fatty acids and risk of cardiovascular disease in the Multi-ethnic Study of Atherosclerosis. J Am Heart Assoc, 2013. 2(4): p. e000092.

(33) Jaudszus, A., et al., trans Palmitoleic acid arises endogenously from dietary vaccenic acid. Am J Clin Nutr, 2014. 99(3): p. 431-5.

(34) Kratz, M., et al., Dairy fat intake is associated with glucose tolerance, hepatic and systemic insulin sensitivity, and liver fat but not beta-cell function in humans. Am J Clin Nutr, 2014. 99(6): p. 1385-1396.

(35) Patel, P.S., et al., Fatty acids measured in plasma and erythrocyte-membrane phospholipids and derived by food-frequency questionnaire and the risk of new- onset type 2 diabetes: a pilot study in the European Prospective Investigation into Cancer and Nutrition (EPIC)-Norfolk cohort. Am J Clin Nutr, 2010. 92(5): p. 1214-22.

(36) Wang, H., et al., Obesity modifies the relations between serum markers of dairy fats and inflammation and oxidative stress among adolescents. Obesity (Silver Spring), 2011. 19(12): p. 2404-10.

(37) Samuelson, G., et al., Dietary fat intake in healthy adolescents: inverse relationships between the estimated intake of saturated fatty acids and serum cholesterol. Br J Nutr, 2001. 85(3): p. 333-41.

(38) Jacobs, S., et al., Association between erythrocyte membrane fatty acids and biomarkers of dyslipidemia in the EPIC-Potsdam study. Eur J Clin Nutr, 2014. 68(4): p. 517-25.

(39) Chowdhury, R., et al., Association of dietary, circulating, and supplement fatty acids with coronary risk: a systematic review and meta-analysis. Ann Intern Med, 2014. 160(6): p. 398-406.

(40) Kroger, J., et al., Erythrocyte membrane phospholipid fatty acids, desaturase activity, and dietary fatty acids in relation to risk of type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition (EPIC)-Potsdam Study. Am J Clin Nutr, 2011. 93(1): p. 127-42.

(41) Forouhi, N.G., et al., Differences in the prospective association between individual plasma phospholipid saturated fatty acids and incident type 2 diabetes: the EPIC- InterAct case-cohort study. Lancet Diabetes Endocrinol, 2014. 2(10): p. 810-8.

(42) Labonte, M.E., et al., Impact of dairy products on biomarkers of inflammation: a systematic review of randomized controlled nutritional intervention studies in overweight and obese adults. Am J Clin Nutr, 2013. 97(4): p. 706-17.

(43) Willett, W.C., et al., Intake of trans fatty acids and risk of coronary heart disease among women. Lancet, 1993. 341(8845): p. 581-5.

(44) Nestel, P., Trans fatty acids: are its cardiovascular risks fully appreciated? Clin Ther, 2014. 36(3): p. 315-21.

(45) Wang, Y. and S.D. Proctor, Current issues surrounding the definition of trans-fatty acids: implications for health, industry and food labels. Br J Nutr, 2013. 110(8): p. 1369-83.

(46) Kuhnt, K., et al., Trans fatty acid isomers and the trans-9/trans-11 index in fat containing foods. Eur J Lipid Sci Technol, 2011. 113(10): p. 1281-1292.

(47) Mozaffarian, D., A. Aro, and W.C. Willett, Health effects of trans-fatty acids: experimental and observational evidence. Eur J Clin Nutr, 2009. 63 Suppl 2: p. S5-21.

(48) Jaudszus, A., et al., Vaccenic acid-mediated reduction in cytokine production is independent of c9,t11-CLA in human peripheral blood mononuclear cells. Biochim Biophys Acta, 2012. 1821(10): p. 1316-22.

(49) Motard-Belanger, A., et al., Study of the effect of trans fatty acids from ruminants on blood lipids and other risk factors for cardiovascular disease. Am J Clin Nutr, 2008. 87(3): p. 593-9.

(50) Bendsen, N.T., et al., Consumption of industrial and ruminant trans fatty acids and risk of coronary heart disease: a systematic review and meta-analysis of cohort studies. Eur J Clin Nutr, 2011. 65(7): p. 773-83.

(51) Laake, I., et al., 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, 2012. 108(4): p. 743-54.

(52) Jakobsen, M.U., et al., Intake of ruminant trans fatty acids and risk of coronary heart disease. Int J Epidemiol, 2008. 37(1): p. 173-82.

(53) Gebauer, S.K., et al., Effects of ruminant trans fatty acids on cardiovascular disease and cancer: a comprehensive review of epidemiological, clinical, and mechanistic studies. Adv Nutr, 2011. 2(4): p. 332-54.

(54) Benbrook, C.M., et al., Organic production enhances milk nutritional quality by shifting fatty acid composition: a United States-wide, 18-month study. PLoS One, 2013. 8(12): p. e82429.

(55) Stergiadis, S., et al., Effect of feeding intensity and milking system on nutritionally relevant milk components in dairy farming systems in the North East of England. J Agric Food Chem, 2012. 60(29): p. 7270-81.

(56) Kusche, D., et al., Fatty acid profiles and antioxidants of organic and conventional milk from low- and high-input systems during outdoor period. J Sci Food Agric, 2014.

(57) Lopez, C., V. Briard-Bion, and O. Menard, Polar lipids, sphingomyelin and long-chain unsaturated fatty acids from the milk fat globule membrane are increased in milks produced by cows fed fresh pasture based diet during spring. Food Research International, 2014. 58: p. 59-68.

(58) Palupi, E., et al., Comparison of nutritional quality between conventional and organic dairy products: a meta-analysis. J Sci Food Agric, 2012. 92(14): p. 2774-81.

(59) Shingfield, K.J., M. Bonnet, and N.D. Scollan, Recent developments in altering the fatty acid composition of ruminant-derived foods. Animal, 2013. 7 Suppl 1: p. 132-62.

(60) Malpuech-Brugere, C., et al., Differential impact of milk fatty acid profiles on cardiovascular risk biomarkers in healthy men and women. Eur J Clin Nutr, 2010. 64(7): p. 752-9.

(61) Livingstone, K.M., J.A. Lovegrove, and D.I. Givens, The impact of substituting SFA in dairy products with MUFA or PUFA on CVD risk: evidence from human intervention studies. Nutr Res Rev, 2012. 25(2): p. 193-206.

(62) Pintus, S., et al., Sheep cheese naturally enriched in alpha-linolenic, conjugated linoleic and vaccenic acids improves the lipid profile and reduces anandamide in the plasma of hypercholesterolaemic subjects. Br J Nutr, 2013. 109(8): p. 1453-62.

(63) Anderson, G.H., et al., Milk proteins in the regulation of body weight, satiety, food intake and glycemia. Nestle Nutr Workshop Ser Pediatr Program, 2011. 67: p. 147-59.

(64) Sousa, G.T., et al., Dietary whey protein lessens several risk factors for metabolic diseases: a review. Lipids Health Dis, 2012. 11: p. 67.

(65) Bonjour, J.P., et al., Dairy in adulthood: from foods to nutrient interactions on bone and skeletal muscle health. J Am Coll Nutr, 2013. 32(4): p. 251-63.

(66) Mithal, A., et al., Impact of nutrition on muscle mass, strength, and performance in older adults. Osteoporos Int, 2013. 24(5): p. 1555-66.

(67) Witard, O.C., et al., Myofibrillar muscle protein synthesis rates subsequent to a meal in response to increasing doses of whey protein at rest and after resistance exercise. Am J Clin Nutr, 2014. 99(1): p. 86-95.

(68) Kerstetter, J.E., A.M. Kenny, and K.L. Insogna, Dietary protein and skeletal health: a review of recent human research. Curr Opin Lipidol, 2011. 22(1): p. 16-20.

(69) Caroli, A., et al., Invited review: Dairy intake and bone health: a viewpoint from the state of the art. J Dairy Sci, 2011. 94(11): p. 5249-62.

(70) Boutrou, R., et al., Sequential release of milk protein-derived bioactive peptides in the jejunum in healthy humans. Am J Clin Nutr, 2013. 97(6): p. 1314-23.

(71) Pihlanto, A., Bioactive peptides, in Encyclopedia of Dairy Sciences 2nd Edition. 2011, Academic Press: London. p. 879-886.

(72) Cicero, A.F., et al., Blood pressure lowering effect of lactotripeptides assumed as functional foods: a meta-analysis of current available clinical trials. J Hum Hypertens, 2011. 25(7): p. 425-36.

(73) Cicero, A.F., et al., Do the lactotripeptides isoleucine-proline-proline and valine-proline-proline reduce systolic blood pressure in European subjects? A meta- analysis of randomized controlled trials. Am J Hypertens, 2013. 26(3): p. 442-9.

(74) Costa, A.G., et al., When, where and how osteoporosis-associated fractures occur: an analysis from the Global Longitudinal Study of Osteoporosis in Women (GLOW). PLoS One, 2013. 8(12): p. e83306.

(75) Zhang, Y., et al., Coordinated regulation of protein synthesis and degradation by mTORC1. Nature, 2014. 513(7518): p. 440-3.

(76) Tang, J.E., et al., Ingestion of whey hydrolysate, casein, or soy protein isolate: effects on mixed muscle protein synthesis at rest and following resistance exercise in young men. J Appl Physiol (1985), 2009. 107(3): p. 987-92.

(77) Yang, Y., et al., Resistance exercise enhances myofibrillar protein synthesis with graded intakes of whey protein in older men. Br J Nutr, 2012. 108(10): p. 1780-8. (78) Phillips, S.M., J.E. Tang, and D.R. Moore, The role of milk- and soy-based protein in support of muscle protein synthesis and muscle protein accretion in young and elderly persons. J Am Coll Nutr, 2009. 28(4): p. 343-54.

(79) de Beer, H., Dairy products and physical stature: a systematic review and meta- analysis of controlled trials. Econ Hum Biol, 2012. 10(3): p. 299-309.

(80) Crowe, F.L., et al., The association between diet and serum concentrations of IGF-I, IGFBP-1, IGFBP-2, and IGFBP-3 in the European Prospective Investigation into Cancer and Nutrition. Cancer Epidemiol Biomarkers Prev, 2009. 18(5): p. 1333-40. (81) Hunt, J.R., L.K. Johnson, and Z.K. Fariba Roughead, Dietary protein and calcium interact to influence calcium retention: a controlled feeding study. Am J Clin Nutr, 2009. 89(5): p. 1357-65.

(82) Tang, M., L.E. O'Connor, and W.W. Campbell, Diet-induced weight loss: the effect of dietary protein on bone. J Acad Nutr Diet, 2014. 114(1): p. 72-85.

(83) Norat, T., et al., Diet, serum insulin-like growth factor-I and IGF-binding protein-3 in European women. Eur J Clin Nutr, 2007. 61(1): p. 91-8.

(84) Martin, R.M., J.M. Holly, and D. Gunnell, Milk and linear growth: programming of the igf-I axis and implication for health in adulthood. Nestle Nutr Workshop Ser Pediatr Program, 2011. 67: p. 79-97.

(85) Hrolfsdottir, L., et al., Maternal milk consumption, birth size and adult height of offspring: a prospective cohort study with 20 years of follow-up. Eur J Clin Nutr, 2013. 67(10): p. 1036-41.

(86) Qin, L.Q., K. He, and J.Y. Xu, Milk consumption and circulating insulin-like growth factor-I level: a systematic literature review. Int J Food Sci Nutr, 2009. 60 Suppl 7: p. 330-40.

(87) Poole, E.M., et al., Body size in early life and adult levels of insulin-like growth factor 1 and insulin-like growth factor binding protein 3. Am J Epidemiol, 2011. 174(6): p. 642-51.

(88) Larsson, S.C., et al., Association of diet with serum insulin-like growth factor I in middle-aged and elderly men. Am J Clin Nutr, 2005. 81(5): p. 1163-7.

(89) Arjmandi, B.H., et al., Soy protein has a greater effect on bone in postmenopausal women not on hormone replacement therapy, as evidenced by reducing bone resorption and urinary calcium excretion. J Clin Endocrinol Metab, 2003. 88(3): p. 1048-54.

(90) Khalil, D.A., et al., Soy protein supplementation increases serum insulin-like growth factor-I in young and old men but does not affect markers of bone metabolism. J Nutr, 2002. 132(9): p. 2605-8.

(91) Leonardi, M., et al., The evolution of lactase persistence in Europe. A synthesis of archaeological and genetic evidence. International Dairy Journal, 2012. 22(2): p. 88-97.

(92) Krüttli, A., et al., Ancient DNA analysis reveals high frequency of European lactase persistence allele (T-13910) in medieval central europe. PLoS One, 2014. 9(1): p. e86251.

(93) Itan, Y., et al., A worldwide correlation of lactase persistence phenotype and genotypes. BMC Evol Biol, 2010. 10: p. 36.

(94) Vesa, T.H., P. Marteau, and R. Korpela, Lactose intolerance. J Am Coll Nutr, 2000. 19(2 Suppl): p. 165s-175s.

(95) Savaiano, D.A., C.J. Boushey, and G.P. McCabe, Lactose intolerance symptoms assessed by meta-analysis: a grain of truth that leads to exaggeration. J Nutr, 2006. 136(4): p. 1107-13.

(96) Savaiano, D., Lactose intolerance: an unnecessary risk for low bone density. Nestle Nutr Workshop Ser Pediatr Program, 2011. 67: p. 161-71.

(97) Szilagyi, A., Review article: lactose--a potential prebiotic. Aliment Pharmacol Ther, 2002. 16(9): p. 1591-602.

(98) Venema, K., Intestinal fermentation of lactose and prebiotic lactose derivatives, including human milk oligosaccharides. International Dairy Journal, 2012. 22(2): p. 123-140.

(99) Brown-Esters, O., P. Mc Namara, and D. Savaiano, Dietary and biological factors influencing lactose intolerance. International Dairy Journal, 2012. 22(2): p. 98-103.

(100) He, T., et al., The role of colonic metabolism in lactose intolerance. Eur J Clin Invest, 2008. 38(8): p. 541-7.

(101) Michaelsen, K.F., et al., Cow's milk in treatment of moderate and severe undernutrition in low-income countries. Nestle Nutr Workshop Ser Pediatr Program, 2011. 67: p. 99-111.

(102) Heaney, R.P., Absorbability and utility of calcium in mineral waters. Am J Clin Nutr, 2006. 84(2): p. 371-4.

(103) Bonjour, J.P., Calcium and phosphate: a duet of ions playing for bone health. J Am Coll Nutr, 2011. 30(5 Suppl 1): p. 438s-48s.

(104) Christensen, R., et al., Effect of calcium from dairy and dietary supplements on faecal fat excretion: a meta-analysis of randomized controlled trials. Obes Rev, 2009. 10(4): p. 475-86.

(105) Soerensen, K.V., et al., Effect of dairy calcium from cheese and milk on fecal fat excretion, blood lipids, and appetite in young men. Am J Clin Nutr, 2014. 99(5): p. 984-91.

(106) Lorenzen, J.K., S.K. Jensen, and A. Astrup, Milk minerals modify the effect of fat intake on serum lipid profile: results from an animal and a human short-term study. Br J Nutr, 2014. 111(8): p. 1412-20.

(107) Rabot, S., et al., Guidance for substantiating the evidence for beneficial effects of probiotics: impact of probiotics on digestive system metabolism. J Nutr, 2010. 140(3): p. 677s-89s.

(108) Korhonen, H.J., Production and properties of health-promoting proteins and peptides from bovine colostrum and milk. Cell Mol Biol (Noisy-le-grand), 2013. 59(1): p. 12-24.

(109) Bütikofer, U., et al., Quantification of the angiotensin-converting enzyme-inhibiting tripeptides Val-Pro-Pro and Ile-Pro-Pro in hard, semi-hard and soft cheeses. International Dairy Journal, 2007. 17(8): p. 968-975.

(110) Bütikofer, U., et al., Occurrence of the angiotensin-converting enzyme inhibiting tripeptides Val-Pro-Pro and Ile-Pro-Pro in different cheese varieties of Swiss origin. J Dairy Sci, 2008. 91(1): p. 29-38.

(111) St-Onge, M.P., E.R. Farnworth, and P.J. Jones, Consumption of fermented and nonfermented dairy products: effects on cholesterol concentrations and metabolism. Am J Clin Nutr, 2000. 71(3): p. 674-81.

(112) Garcia-Albiach, R., et al., Molecular analysis of yogurt containing Lactobacillus delbrueckii subsp. bulgaricus and Streptococcus thermophilus in human intestinal microbiota. Am J Clin Nutr, 2008. 87(1): p. 91-6.

(113) Marette, A. and E. Picard-Deland, Yogurt consumption and impact on health: focus on children and cardiometabolic risk. Am J Clin Nutr, 2014. 99(5 Suppl): p. 1243s-7s. (114) El-Abbadi, N.H., M.C. Dao, and S.N. Meydani, Yogurt: role in healthy and active aging. Am J Clin Nutr, 2014. 99(5 Suppl): p. 1263s-70s.

(115) Morelli, L., Yogurt, living cultures, and gut health. Am J Clin Nutr, 2014. 99(5 Suppl): p. 1248s-50s.

(116) Wang, H., et al., Yogurt consumption is associated with better diet quality and metabolic profile in American men and women. Nutr Res, 2013. 33(1): p. 18-26.

(117) Gao, D., et al., Dairy products consumption and risk of type 2 diabetes: systematic review and dose-response meta-analysis. PLoS One, 2013. 8(9): p. e73965.

(118) Jacques, P.F. and H. Wang, Yogurt and weight management. Am J Clin Nutr, 2014. 99(5 Suppl): p. 1229s-34s.

(119) Romaguera, D., et al., Food composition of the diet in relation to changes in waist circumference adjusted for body mass index. PLoS One, 2011. 6(8): p. e23384.

(120) Baier, S.R., et al., MicroRNAs Are Absorbed in Biologically Meaningful Amounts from Nutritionally Relevant Doses of Cow Milk and Affect Gene Expression in Peripheral Blood Mononuclear Cells, HEK-293 Kidney Cell Cultures, and Mouse Livers. J Nutr, 2014. 144(10): p. 1495-500.

(121) Ressing, M., M. Blettner, and S.J. Klug, Systematic literature reviews and meta-analyses: part 6 of a series on evaluation of scientific publications. Dtsch Arztebl Int, 2009. 106(27): p. 456-63.

(122) Deutsche Gesellschaft für Ernährung, Evidenzbasierte Leitlinie: Fettkonsum und Prävention ausgewählter ernährungsmitbedingter Krankheiten. 2006, Deutsche Gesellschaft für Ernährung e.V.

(123) Hu, D., et al., Dairy foods and risk of stroke: A meta-analysis of prospective cohort studies. Nutr Metab Cardiovasc Dis, 2014. 24(5): p. 460-9.

(124) Soedamah-Muthu, S.S., et al., Milk and dairy consumption and incidence of cardiovascular diseases and all-cause mortality: dose-response meta-analysis of prospective cohort studies. Am J Clin Nutr, 2011. 93(1): p. 158-71.

(125) Elwood, P.C., et al., The consumption of milk and dairy foods and the incidence of vascular disease and diabetes: an overview of the evidence. Lipids, 2010. 45(10): p. 925-39.

(126) Gibson, R.A., et al., The effect of dairy foods on CHD: a systematic review of prospective cohort studies. Br J Nutr, 2009. 102(9): p. 1267-75.

(127) Patterson, E., et al., Association between dairy food consumption and risk of myocardial infarction in women differs by type of dairy food. J Nutr, 2013. 143(1): p. 74-9.

(128) Abreu, S., et al., Intake of milk, but not total dairy, yogurt, or cheese, is negatively associated with the clustering of cardiometabolic risk factors in adolescents. Nutr Res, 2014. 34(1): p. 48-57.

(129) Bel-Serrat, S., et al., Is dairy consumption associated with low cardiovascular disease risk in European adolescents? Results from the HELENA Study. Pediatr Obes, 2013.

(130) Ralston, R.A., et al., A systematic review and meta-analysis of elevated blood pressure and consumption of dairy foods. J Hum Hypertens, 2012. 26(1): p. 3-13.

(131) Soedamah-Muthu, S.S., et al., Dairy consumption and incidence of hypertension: a dose-response meta-analysis of prospective cohort studies. Hypertension, 2012. 60(5): p. 1131-7.

(132) Dong, J.Y., et al., Effect of probiotic fermented milk on blood pressure: a meta- analysis of randomised controlled trials. Br J Nutr, 2013. 110(7): p. 1188-94.

(133) Yuan, W.L., et al., Influence of dairy product consumption on children's blood pressure: results from the QUALITY cohort. J Acad Nutr Diet, 2013. 113(7): p. 936-41.

(134) Machin, D.R., et al., Hypotensive effects of solitary addition of conventional nonfat dairy products to the routine diet: a randomized controlled trial. Am J Clin Nutr, 2014. 100(1): p. 80-87.

(135) Appel, L.J., et al., A clinical trial of the effects of dietary patterns on blood pressure.

DASH Collaborative Research Group. N Engl J Med, 1997. 336(16): p. 1117-24. (136) Tong, X., et al., Dairy consumption and risk of type 2 diabetes mellitus: a meta-analysis of cohort studies. Eur J Clin Nutr, 2011. 65(9): p. 1027-31.

(137) Aune, D., et al., Dairy products and the risk of type 2 diabetes: a systematic review and dose-response meta-analysis of cohort studies. Am J Clin Nutr, 2013. 98(4): p. 1066-83.

(138) Fumeron, F., et al., Dairy products and the metabolic syndrome in a prospective study, DESIR. J Am Coll Nutr, 2011. 30(5 Suppl 1): p. 454S-63S.

(139) Zong, G., et al., Dairy consumption, type 2 diabetes, and changes in cardiometabolic traits: a prospective cohort study of middle-aged and older Chinese in Beijing and Shanghai. Diabetes Care, 2014. 37(1): p. 56-63.

(140) O'Connor, L.M., et al., Dietary dairy product intake and incident type 2 diabetes: a prospective study using dietary data from a 7-day food diary. Diabetologia, 2014. 57(5): p. 909-17.

(141) Sluijs, I., et al., The amount and type of dairy product intake and incident type 2 diabetes: results from the EPIC-InterAct Study. Am J Clin Nutr, 2012. 96(2): p. 382-90.

(142) Rideout, T.C., et al., Consumption of low-fat dairy foods for 6 months improves insulin resistance without adversely affecting lipids or bodyweight in healthy adults: a randomized free-living cross-over study. Nutr J, 2013. 12: p. 56.

(143) Melnik, B.C., Leucine signaling in the pathogenesis of type 2 diabetes and obesity. World J Diabetes, 2012. 3(3): p. 38-53.

(144) Crichton, G.E., et al., Dairy consumption and metabolic syndrome: a systematic review of findings and methodological issues. Obes Rev, 2011. 12(5): p. e190-201.

(145) Louie, J.C., et al., Higher regular fat dairy consumption is associated with lower incidence of metabolic syndrome but not type 2 diabetes. Nutr Metab Cardiovasc Dis, 2013. 23(9): p. 816-21.

(146) Kim, J., Dairy food consumption is inversely associated with the risk of the metabolic syndrome in Korean adults. J Hum Nutr Diet, 2013. 26 Suppl 1: p. 171-9. (147) Shin, H., et al., Dairy product intake is inversely associated with metabolic syndrome in Korean adults: Anseong and Ansan cohort of the Korean Genome and Epidemiology Study. J Korean Med Sci, 2013. 28(10): p. 1482-8.

(148) Dugan, C.E. and M.L. Fernandez, Effects of Dairy on Metabolic Syndrome Parameters: A Review. Yale J Biol Med, 2014. 87(2): p. 135-147.

(149) World Health Organization, Obesity and overweight. Factsheet No. 311. Updated August 2014.

(150) Louie, J.C., et al., Dairy consumption and overweight and obesity: a systematic review of prospective cohort studies. Obes Rev, 2011. 12(7): p. e582-92.

(151) Noel, S.E., et al., Milk intakes are not associated with percent body fat in children from ages 10 to 13 years. J Nutr, 2011. 141(11): p. 2035-41.

(152) Pan, A., et al., Changes in water and beverage intake and long-term weight changes: results from three prospective cohort studies. Int J Obes (Lond), 2013. 37(10): p. 1378-85.

(153) Abargouei, A.S., et al., Effect of dairy consumption on weight and body composition in adults: a systematic review and meta-analysis of randomized controlled clinical trials. Int J Obes (Lond), 2012. 36(12): p. 1485-93.

(154) Chen, M., et al., Effects of dairy intake on body weight and fat: a meta-analysis of randomized controlled trials. Am J Clin Nutr, 2012. 96(4): p. 735-47.

(155) Dougkas, A., et al., Associations between dairy consumption and body weight: a review of the evidence and underlying mechanisms. Nutr Res Rev, 2011: p. 1-24.

Literatur Krebs

(156) Webseite Deutsches Krebsforschungsinstitut: http://www.dkfz.de/de/aktuelles/index.html

(157) Webseite Nationales Zentrum für Tumorerkrankungen in Heidelberg: http://www.nct-heidelberg.de/

(158) World Cancer Report 2014. IARC Nonserial Publication. Stewart, B. W., Wild, C. P., ISBN-13: 9789283204299

(159) Webseite Deutsche Krebshilfe: http://www.krebshilfe.de/wir-informieren/ueber- krebs/was-ist-krebs.html

(160) Die blauen Ratgeber 2012. Krebsrisiko – sind Sie gefährdet? Herausgeber Deutsche Krebshilfe e.V., Buschstr. 32, 53113 Bonn. Internet: www.krebshilfe.de

(161) Bundesinstitut für Risikobewertung (BfR), BfR sieht keine Assoziation zwischen dem Progesterongehalt in Milch und Brustkrebs, Stellungnahme Nr. 022/2008 vom 21. Januar 2008.

(162) Beiträge zur Gesundheitsberichterstattung des Bundes Krebs in Deutschland 2009/2010. Eine gemeinsame Veröffentlichung des Robert Koch-Instituts und der Gesellschaft der epidemiologischen Krebsregister in Deutschland e. V. 9. Ausgabe. (163) Webseite Bundesinstitut für Risikobewertung (BfR): http://www.bfr.bund.de/de/ a-z_index/milch-4887.html

(164) Aune, D., et al., Dairy products and colorectal cancer risk: a systematic review and meta-analysis of cohort studies. Ann Oncol, 2012. 23(1): p. 37-45.

(165) Huncharek, M., J. Muscat, and B. Kupelnick, Colorectal cancer risk and dietary intake of calcium, vitamin D, and dairy products: a meta-analysis of 26,335 cases from 60 observational studies. Nutr Cancer, 2009. 61(1): p. 47-69.

(166) Ralston, R.A., et al., Colorectal cancer and nonfermented milk, solid cheese, and fermented milk consumption: a systematic review and meta-analysis of prospective studies. Crit Rev Food Sci Nutr, 2014. 54(9): p. 1167-79.

(167) Murphy, N., et al., Consumption of dairy products and colorectal cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC). PLoS One, 2013. 8(9): p. e72715.

(168) Keum, N., et al., Calcium intake and colorectal cancer risk: Dose-response meta- analysis of prospective observational studies. Int J Cancer, 2014.

(169) Elwood P.C., Givens D.I., Beswick A.D., Fehily A.M., Pickering J.E., Gallacher J.: The survival advantage of milk and dairy consumption: an overview of evidence from cohort studies of vascular diseases, diabetes and cancer. J. Am. Coll. Nutr. 2008; 27:723S–34S.

(170) Cho E., Smith-Warner S.A., Spiegelman D., Beeson W.L., van den Brandt P.A., Colditz G.A., Folsom A.R., Fraser G.E., Freudenheim J.L., Giovannucci E.: Dairy foods, calcium, and colorectal cancer:a pooled analysis of 10 cohort studies. J. Natl. Cancer Inst. 2004a; 96:1015–22.

(171) Park Y., Leitzmann M.F., Subar A.F., Hollenbeck A., Schatzkin A.: Dairy food, calcium, and risk of cancer in the NIH-AARP Diet and Health Study. Arch. Intl. Med. 2009; 169:391–401.

(172) Chan AT, Giovannucci E.L.: Primary prevention of colorectal cancer. Gastroenterology 2010; 138:2029–43.

(173) Holick M.F.: Vitamin D and sunlight: strategies for cancer prevention and other health benefits. Clin. J. Am. Soc. Nephrol. 2008; 3:1548–54.

(174) Govers M., van der Meet R.: Effects of dietary calcium and phosphate on the intestinal interactions between calcium, phosphate, fatty acids, and bile acids. Gut 1993; 34:365–70.

(175) Newmark H.L., Wargovich M.J., Bruce W.R.: Colon cancer and dietary fat, phosphate, and calcium: a hypothesis. J. Natl. Cancer Inst. 1984; 72:1323–5.

(176) Lamprecht S.A., Lipkin M.: Cellular mechanisms of calcium and vitamin D in the inhibition of colorectal carcinogenesis. Ann. NY Acad. Sci. 2001; 952:73–87.

(177) Fedirko V., Bostick R.M., Flanders W.D., Long Q., Sidelnikov E., Shaukat A., Daniel C.R., Rutherford R.E., Woodard J.J.: Effects of vitamin d and calcium on proliferation and differentiation in normal colon mucosa: a randomized clinical trial. Cancer Epidemiol. Biomarkers Prev. 2009; 18: 2933–41.

(178) Holt P.R., Atillasoy E.O., Gilman J., Guss J., Moss S.F., Newmark H., Fan K., Yang K., Lipkin M.: Modulation of abnormal colonic epithelial cell proliferation and differentiation by low-fat dairy foods: a randomized controlled trial. JAMA 1998; 280:1074–9.

(179) Karagas M.R., Tosteson T.D., Greenberg E.R., Rothstein R.I., Roebuck B.D., Herrin M., Ahnen D.: Effects of milk and milk products on rectal mucosal cell proliferation in humans. Cancer Epidemiol. Biomarkers Prev. 1998; 7:757–66.

(180) Holt P.R., Wolper C., Moss S.F., Yang K., Lipkin M.: Comparison of calcium supplementation or low-fat dairy foods on epithelial cell proliferation and differentiation. Nutr. Cancer 2001; 41:150–5.

(181) Ahearn T.U., McCullough M.L., Flanders W.D., Long Q., Sidelnikov E., Fedirko V., Daniel C.R., Rutherford R.E., Shaukat A., Bostick R.M.: A randomized clinical trial of the effects of supplemental calcium and vitamin D3 on markers of their metabolismpatients. Cancer Res. 2011; 71:413–23.

(182) Aune D., Lau R., Chan D., Vieira R., Greenwood D., Kampman E., Norat T.: Dairy products and colorectal cancer risk: a systematic review and meta-analysis of cohort studies. Ann. Oncol. 2012; 23:37–45.

(183) Llor X., Jacoby R.F., Teng B.B., Davidson N.O., Sitrin M.D., Brasitus T.A.: K-ras mutations in 1, 2-dimethylhydrazine-induced colonic tumors: effects of supplemental dietary calcium and vitamin D deficiency. Cancer Res. 1991; 51:4305–9.

(184) Cho E., Smith-Warner S.A., Spiegelman D., Beeson W.L., van den Brandt P.A., Colditz G.A., Folsom A.R., Fraser G.E., Freudenheim J.L., Giovannucci E., Goldbohm R.A., Graham S., Miller A.B., Pietinen P., Potter J.D., Rohan T.E., Terry P., Toniolo P., Virtanen M.J., Willett W.C., Wolk A., Wu K., Yaun S.S., Zeleniuch-Jacquotte A., Hunter D.J.: Dairy foods, calcium, and colorectal cancer: a pooled analysis of 10 cohort studies. J. Natl. Cancer Inst. 2004b; 96:1015–22.

(185) Holt P.R.: New insights into calcium, dairy and colon cancer. World J. Gastroenterol. 2008; 14:4429–33.

(186) Mizoue T., Kimura Y., Toyomura K., Nagano J., Kono S., Mibu R., Tanaka M., Kakeji Y., Maehara Y., Okamura T., Ikejiri K., Futami K., Yasunami Y., Maekawa T., Takenaka K., Ichimiya H., Imaizumi N.: Calcium, dairy foods, vitamin D, and colorectal cancer risk: the Fukuoka colorectal cancer study 2008.

(187) Liew C., Schut H.A., Chin S.F., Pariza M.W., Dashwood R.H.: Protection of conjugated linoleic acids against 2-amino-3-methylimidazo[4,5-f] quinoline- induced colon carcinogenesis in the F344 rat: a study of inhibitory mechanisms. Carcinogenesis 1995; 16:3037–43.

(188) Hague A., Paraskeva C.: The short-chain fatty acid butyrate induces apoptosis in colorectal tumour cell lines. Eur. J. Cancer Prev. 1995; 4:359–64.

(189) Parodi P.W.: Cows' milk fat components as potential anticarcinogenic agents. J. Nutr. 1997; 127:1055–60.

(190) Larsson S.C., Bergkvist L., Wolk A.: High-fat dairy food and conjugated linoleic acid intakes in relation to colorectal cancer incidence in the Swedish mammography cohort. Am. J. Clin. Nutr. 2005; 82:894–900.

(191) Kelley N.S., Hubbard N.E., Erickson K.L.: Conjugated linoleic acid isomers and cancer. J. Nutr. 2007; 137:2599–607.

(192) Goeptar A.R., Koeman J.H., van Boekel MAJS, Alink G.M.: Impact of digestion on the antimutagenic activity of the milk protein casein. Nutr. Res. 1997; 17:1363–79.

(193) Parodi P.W.: A role for milk proteins in cancer prevention. Aust. J. Dairy Technol. 1998; 53:37–47.

(194) MacDonald R.S., Thornton W.H., Marshall R.T.: A cell culture model to identify biologically active peptides generated by bacterial hydrolysis of casein. J. Dairy Sci. 1994; 77:1167–75.

(195) Belobrajdic D.P., McIntosh G.H., Owens J.A.: Whey proteins protect more than red meat against azoxymethane-induced ACF in Wistar rats. Cancer Lett. 2003; 198:43–51.

(196) Dong, J.Y., et al., Dairy consumption and risk of breast cancer: a meta-analysis of prospective cohort studies. Breast Cancer Res Treat, 2011. 127(1): p. 23-31.

(197) Dong JY, Zhang L, He K, Qin LQ. 2011. Dairy consumption and risk of breast cancer: a meta-analysis of prospective cohort studies. Breast Cancer Res Treat 127:23-31. (198) Duarte D, Nicolau A, Teixeira J, Rodrigues L. 2011. The effect of bovine milk lactoferrin on human breast cancer cell lines. J Dairy Sci 94:66–76.

(200) Cho E, Spiegelman D, Hunter DJ, Chen WY, Stampfer MJ, Colditz GA, Willett WC.

2003. Premenopausal fat intake and risk of breast cancer. J Natl Cancer Inst 95:1079–85.

(199) Kelley NS, Hubbard NE, Erickson KL. 2007. Conjugated linoleic acid isomers and cancer. J Nutr 137:2599–607.

(201) Knekt P, J¨arvinen R, Sepp¨anen R, Pukkala E, Aromaa A. 1996. Intake of dairy products and the risk of breast cancer. Br J Cancer 73:687–91.

(202) McCullough ML, Rodriguez C, Diver WR, Feigelson HS, Stevens VL, Thun MJ, Calle EE. 2005. Dairy, calcium, and vitamin D intake and postmenopausal breast cancer risk in the Cancer Prevention Study II Nutrition Cohort. Cancer Epidemiol Biomarkers Prev 14:2898–904.

(203) Hjart°aker A, Thoresen M, Engeset D, Lund E. 2010. Dairy consumption and calcium intake and risk of breast cancer in a prospective cohort: The Norwegian women and cancer study. Cancer Cause Control 21:1875–85.

(204) Cui Y, Rohan TE. 2006. Vitamin D, calcium, and breast cancer risk: a review. Cancer Epidemiol Biomarkers Prev 15:1427–37.

(205) Parodi PW. 2005. Dairy product consumption and the risk of breast cancer. J Am Coll Nutr 24:556S–68S.

(206) Sergeev IN. 2005. Calcium signaling in cancer and vitamin D. J Steroid Biochem Mol Biol 97:145–51.

(207) Chen P, Hu P, Xie D, Qin Y, Wang F, Wang H. 2010. Meta-analysis of vitamin D, calcium and the prevention of breast cancer. Breast Cancer Res Treat 121:469–77.

(208) Tsuda H, Sekine K, Ushida Y, Kuhara T, Takasuka N, Iigo M, Han BS, Moore MA. 2000. Milk and dairy products in cancer prevention: focus on bovine lactoferrin. Mutat Res 462:227–33.

(209) Wakabayashi H, Yamauchi K, Takase M. 2006. Lactoferrin research, technology and applications. Intl Dairy J 16:1241–51.

(210) Rodrigues L, Teixeira J, Schmitt F, Paulsson M, M°ansson HL. 2008. Lactoferrin and cancer disease prevention. Crit Rev Food Sci 49:203–17.

(211) Tsuda H, Sekine K, Ki F, Iigo M. 2002. Cancer prevention by bovine lactoferrin and underlying mechanisms—a review of experimental and clinical studies. Biochem Cell Biol 80:131–6.

(212) Ward P, Paz E, Conneely O. 2005. Lactoferrin. Cell Mol Life Sci 62: 2540–8.

(213) Iigo M, Alexander DB, Long N, Xu J, Fukamachi K, Futakuchi M, Takase M, Tsuda H. 2009. Anticarcinogenesis pathways activated by bovine lactoferrin in the murine small intestine. Biochimie 91:86–101.

(214) Greenlee RT, Murray T, Bolden S, Wingo PA. 2000. Cancer statistics, 2000. CA- Cancer J Clin 50:7–33.

(215) Nwosu V, Carpten J, Trent JM, Sheridan R. 2001. Heterogeneity of genetic alterations in prostate cancer: evidence of the complex nature of the disease. Hum Mol Genet 10:2313–8.

(216) Carpten J, Nupponen N, Isaacs S, Sood R, Robbins C, Xu J, Faruque M, Moses T, Ewing C, Gillanders E. 2002. Germline mutations in the ribonuclease L gene in families showing linkage with HPC1. Nat Genet 30:181–4.

(217) Rökman A, Ikonen T, Seppälä EH, Nupponen N, Autio V, Mononen N, Bailey-Wilson J, Trent J, Carpten J, Matikainen MP. 2002. Germline alterations of the RNASEL gene, a candidate HPC1 gene at 1q25, in patients and families with prostate cancer. Am J Hum Genet 70: 1299–304.

(218) Chan JM, Stampfer MJ, Giovannucci EL. 1998. What causes prostate cancer? A brief summary of the epidemiology. Semin Cancer Biol 8(4):263–73.

(219) Blumenfeld AJ, Fleshner N, Casselman B, Trachtenberg J. 2000. Nutritional aspects of prostate cancer: a review. Can J Urol 7:927–35; discussion 36.

(220) Schmitz-Drager BJ, Eichholzer M, Beiche B, Ebert T. 2001. Nutrition and prostate cancer. Urol Intl 67:1–11.

(221) Schulman C, Ekane S, Zlotta A. 2001. Nutrition and prostate cancer: evidence or suspicion? Urology 58:318–34.

(222) Jankevicius F, Miller S, Ackermann R. 2002. Nutrition and risk of prostate cancer. Urol Intl 68:69–80.

(223) Boeing, H., Prävention durch Ernährung, in 12. Ernährungsbericht 2012. 2012, Deutsche Gesellschaft für Ernährung e.V. p. 340-357.

(224) Allen, N.E., et al., Animal foods, protein, calcium and prostate cancer risk: the European Prospective Investigation into Cancer and Nutrition. Br J Cancer, 2008. 98(9): p. 1574-81.

(225) Thompson IM, Goodman PJ, Tangen CM, Lucia MS, Miller GJ, Ford LG, Lieber MM, Cespedes RD, Atkins JN, Lippman SM, Carlin SM, Ryan A, Szczepanek CM, Crowley JJ, Coltman Jr. CA. 2003. The influence of finasteride on the development of prostate cancer. N Engl J Med 349:215–24.

(226) Parodi PW. 2009. Dairy product consumption and the risk of prostate cancer. Intl Dairy J 19:551–65.

(227) Song, Y., et al., Whole milk intake is associated with prostate cancer-specific mortality among U.S. male physicians. J Nutr, 2013. 143(2): p. 189-96.

(228) Parodi P. 1999. Conjugated linoleic acid and other anticarcinogenic agents of bovine milk fat. J Dairy Sci 82:1339–49.

(229) Parodi P. 2008. Milk lipids: their role as potential anti-cancer agents. Sci des Aliments 28:44–52.

(230) Parodi P. 2007. A role for milk proteins and their peptides in cancer prevention. Curr Pharm Des 13:813–28.

(231) McIntosh GH, Royle PJ, Le Leu RK, Regester GO, Johnson MA, Grinsted RL, Kenward RS, Smithers GW. 1998. Whey proteins as functional food ingredients? Intl Dairy J 8:425–34.

(232) Parodi PW. 1998. A role for milk proteins in cancer prevention. Aust J Dairy Technol 53:37–47.

(233) Bounous G. 2000. Whey protein concentrate (WPC) and glutathione modulation in cancer treatment. Anticancer Res 20:4785–92.

(234) Micke P, Beeh K, Schlaak J, Buhl R. 2001. Oral supplementation with whey proteins increases plasma glutathione levels of HIV-infected patients. Eur J Clin Invest 31:171–8.

(235) Parodi PW. 2001. Cow's milk components with anti-cancer potential. Aust J Dairy Technol 56:65–73.

(236) Eliassen LT, Berge G, Sveinbjornsson B, Svendsen JS, Vorland LH, Rekdal O. 2002. Evidence for a direct antitumor mechanism of action of bovine lactoferricin. Anticancer Res 22:2703–10.

(237) Walzem R, Dillard C, German J. 2002. Whey components: millennia of evolution create functionalities for mammalian nutrition: what we know and what we may be overlooking. Crit Rev Food Sci Nutr 42:353–75.

(238) Kent K, Harper W, Bomser J. 2003. Effect of whey protein isolate on intracellular glutathione and oxidant-induced cell death in human prostate epithelial cells. Toxicol In Vitro 17:27–33.

(239) Tsuda H, Kozu T, Iinuma G, Ohashi Y, Saito Y, Saito D, Akasu T, Alexander DB, Futakuchi M, Fukamachi K, Xu J, Kakizoe T, Iigo M. 2010. Cancer prevention by bovine lactoferrin: from animal studies to human trial. Biometals 23:399–409.

(240) Jemal A, Tiwari RC, Murray T, Ghafoor A, Samuels A, Ward E, Feuer EJ, Thun MJ. 2004. Cancer statistics, 2004. Cancer J Clin 54:8–29.

(241) Reichel H, Koeffler HP, Norman AW. 1989. The role of the vitamin D endocrine system in health and disease. N Engl J Med 320:980–91.

(242) Klein EA. 2005. Chemoprevention of prostate cancer. Crit Rev Oncol Hematol 54:1–10.

(243) Blutt SE, McDonnell TJ, Polek TC, Weigel NL. 2000. Calcitriol-induced apoptosis in LNCaP cells is blocked by overexpression of Bcl-2. Endocrinology 141:10–7.

(244) Sung V, Feldman D. 2000. 1, 25-Dihydroxyvitamin D3 decreases human prostate cancer cell adhesion and migration. Mol Cell Endocrinol 164:133–43.

(245) Lokeshwar BL, Schwartz GG, Selzer MG, Burnstein KL, Zhuang SH, Block NL, Binderup L. 1999. Inhibition of prostate cancer metastasis in vivo: a comparison of 1, 25-dihydroxyvitamin D (calcitriol) and EB1089. Cancer Epidemiol Biomarkers Prev 8:241–8.

Literatur Kalzium/Osteoporose

(246) Kaptoge S., da Silva J., Brixen K., Reid D., Kroger H., Nielsen T., Andersen M., Hagen C., Lorenc R., Boonen S., et al.: Geographical variation in DXA bone mineral density in young European men and women. Results from the Network in Europe on male osteoporosis (NEMO) study. Bone 2008;43:332–339. doi: 10.1016/j.bone.2008.04.001.

(247) F. J. B. Lötters & I. Lenoir-Wijnkoop & P. Fardellone & R. Rizzoli & E. Rocher & M. J. Poley: Dairy foods and osteoporosis: an example of assessing the health- economic impact of food products. Osteoporos Int. (2013) 24:139–150.

(248) Assessment of fracture risk and its application to screening for postmenopausal osteoporosis. Geneva: World Health Organization; 1994.

(249) Reginster JY, Burlet N.: Osteoporosis: a still increasing prevalence. Bone. 2006;38:S4–S9. doi: 10.1016/j.bone.2005.11.024.

(250) Czerwiński E., Osieleniec J., Borowy P.: Osteoporoza — Choroba Milionów Z□amań. Fakty. 2011. Available online.

(251) Badurski J.E., Czerwiński E., Marcinkowska-Suchowierska E.: Zalecenia Polskiej Fundacji Osteoporozy i Polskiego Towarzystwa Osteoartrologii wobec osteoporozy w oparciu o stanowisko Światowej Organizacji Zdrowia (WHO) i Międzynarodowej Fundacji Osteoporozy (IOF) Ortop. Traumatol. Rehabil. 2007;9:45–53.

(252) Hooven F., Adachi J., Adami S., Boonen S., Compston J., Cooper C., Delmas P., Diez-Perez A., Gehlbach S., Greenspan S., et al.: The Global Longitudinal Study of Osteoporosis in Women (GLOW): Rationale and study design. Osteoporos. Int. 2009;20:1107–1116. doi: 10.1007/s00198-009-0958-2.

(253) Kanis J.A., McCloskey E.V., Johansson H., Oden A., Melton J.M., III, Khaltaev A.: A reference standard for the description of osteoporosis. Bone 2008;42:467–475. doi: 10.1016/j.bone.2007.11.001.

(254) Assessment of Facture Risk and Its Application to Screening for Postmenopausal Osteoporosis, Technical Report. WHO Study Group; Geneva, Switzerland: 1994. p. 843.

(255) Badurski J., Dobrecko J., Nowak N., Jezienicka E., Daniluk S., Mrowiec A.: Epidemiologia złamań osteoporotycznych i ocena 10-letniego ryzyka złamania w populacji kobiet regionu Białystok (BOS-2) algorytmem FRAX™ — WHO. Reumatologia 2008;46:72–79.

(256) Budek, A.Z., et al., Dietary protein intake and bone mineral content in adolescents - The Copenhagen Cohort Study. Osteoporos Int, 2007. 18(12): p. 1661-7.

(257) Huncharek, M., J. Muscat, and B. Kupelnick, Impact of dairy products and dietary calcium on bone-mineral content in children: results of a meta-analysis. Bone, 2008. 43(2): p. 312-21.

(258) Moore, L.L., et al., Effects of average childhood dairy intake on adolescent bone health. J Pediatr, 2008. 153(5): p. 667-73.

(259) A., Dick I.M., Wilson S.G., Prince R.L.: Effects of calcium and vitamin D supplementation on hip bone mineral density and calcium-related analytes in elderly ambulatory Australian women: A five-year randomized controlled trial. J. Clin. Endocrinol. Metab. 2008;93:743–749.

(260) Nieves J.W., Barrett-Connor E., Siris E.S., Zion M., Barlas S., Chen Y.T.: Calcium and vitamin D intake influence bone mass, but not short-term fracture risk, in Caucasian postmenopausal women from the National Osteoporosis Risk Assessment (NORA) study. Osteoporos. Int. 2008;19:673–679. doi: 10.1007/s00198-007-0501-2.

(261) Warensjo E., Byberg L., Melhus H., Gedeborg R., Mallmin H., Wolk A., Michaelsson K.: Dietary calcium intake and risk of fracture and osteoporosis: Prospective longitudinal cohort study. BMJ. 2011;342:1473–1482. doi: 10.1136/bmj.d1473.

(262) Cheng M.-H., Chen J.-F., Fuh J.-L., Lee W.-L., Wang P.-H.: Osteoporosis treatment in postmenopausal women with pre-existing fracture. Taiwan. J. Obstet. Gynecol. 2012; 51:153–166. doi: 10.1016/j.tjog.2012.04.001.

(263) Sandler R.B., Slemenda C.W., LaPorte R.E., et al.: Postmenopausal bone density and milk consumption in childhood and adolescence. Am. J. Clin. Nutr. 1985;42:270-274.

(264) Stracke H., Renner G., Knie G., Leidig G., Minne H., Federlin K.: Osteoporosis and bone metabolic parameters in dependence upon calcium intake through milk and milk products. Eur. J. Clin. Nutr. 1993;47:617-622.

(265) Murphy S., Khaw K.T., May H., Compston J.E.: Milk consumption and bone mineral density in middle aged and elderly women. BMJ. 1994;308:939-941.

(266) Smith E.L., Gilligan C., Smith P.E., Sempos C.T.: Calcium supplementation and bone loss in middle-aged women. Am. J. Clin. Nutr. 1989;50:833-842.

(267) Kalkwarf, H.J., J.C. Khoury, and B.P. Lanphear, Milk intake during childhood and adolescence, adult bone density, and osteoporotic fractures in US women. Am J Clin Nutr, 2003. 77(1): p. 257-65.

(268) Diane Feskanich, ScD, Walter C. Willett, MD, DrPH, Meir J. Stampfer MD, DrPH, and Graham A. Colditz, MD, DrPH: Milk, Dietary Calcium, and Bone Fractures in Women: A 12-Year Prospective Study.Am. J. Public Health 1997; 87: 992-997.

(269) Baran D., Sorensen A., Grimes J., et al.: Dietary modification with dairy products for preventing vertebral bone loss in premenopausal women: a three- year prospective study. J. Clin. Endocrinol. Metab. 1990;70:264-270.

(270) Nelson M.E., Fisher E.C., Dilmanian F.A., Dallal G.E., Evans W.J.: A l-y walking program and increased dietary calcium in postmenopausal women: effects on bone. Am. J. Clin. Nutr. 1991;53:1304-1311.

(271) Bischoff-Ferrari, H.A., et al., Milk intake and risk of hip fracture in men and women: a meta-analysis of prospective cohort studies. J Bone Miner Res, 2011. 26(4): p. 833-9.

(272) Kanis, J.A., et al., A meta-analysis of milk intake and fracture risk: low utility for case finding. Osteoporos Int, 2005. 16(7): p. 799-804.

(273) Appleby, P., et al., Comparative fracture risk in vegetarians and nonvegetarians in EPIC-Oxford. Eur J Clin Nutr, 2007. 61(12): p. 1400-6.

(274) Feskanich, D., et al., Milk Consumption During Teenage Years and Risk of Hip Fractures in Older Adults. Jama Pediatrics, 2014. 168(1): p. 54-60.

(275) Hu J.F., Zhao X.H., Jia J.B., Parpia B., Campbell T.C.: Dietary calcium and bone density among middle-aged and elderly women in China. Am. J. Clin. Nutr. 1993;58: 219-227.

(276) Matkovic V., Kostial K., Simonovic I., Buzina R., Brodarec A., Nordin B.E.: Bone status and fracture rates in two regions of Yugoslavia. Am. J. Clin. Nutr. 1979;32:540-549.

(277) Hei S.L., Slemenda C.E., Johnston C.C.: Baseline measurement of bone mass predicts fracture in white women. Ann. Intern Med. 1989; 111:355-361.

(278) Cummings S.R., Black D.M., Nevitt M.C., et al.: Appendicular bone density and age predict hip fractures in women. JAMA 1990;263:665-668.

(279) Rizzoli, R., Dairy products, yogurts, and bone health. Am J Clin Nutr, 2014. 99(5): p. 1256S-62S.

(280) Schönau E.: The peak bone mass concept: is it still relevant? Pediatr. Nephrol. (2004); 19: 825-831.

(281) Fenton T.R., Eliasziw M., Lyon A.W., Tough S.C., Hanley D.A.: Meta-analysis of the quantity of calcium excretion associated with the net acid excretion of the modern diet under the acid-ash diet hypothesis. Am. J. Clin. Nutr. 2008;88:1159-66.

(282) Fenton T.R., Lyon A.W., Eliasziw M., Tough S.C., Hanley D.A.: Meta-analysis of the effect of the acid-ash hypothesis of osteoporosis on calcium balance. J. Bone Miner. Res. 2009;24:1835-40.

(283) Fenton T.R., Lyon A.W., Eliasziw M., Tough S.C., Hanley D.A.: Phosphate decreases urine calcium and increases calcium balance: a meta-analysis of the osteoporosis acid-ash diet hypothesis. Nutr. J. 2009;8:41.

(284) Darling A.L., Millward D.J., Torgerson D.J., Hewitt C.E., Lanham-New S.A.: Dietary protein and bone health: a systematic review and meta-analysis. Am. J. Clin. Nutr. 2009;90:1674-92.

(284) Darling, A.L., et al., Dietary protein and bone health: a systematic review and meta- analysis. Am J Clin Nutr, 2009. 90(6): p. 1674-92.

(285) Rzany, B. and C. Kahl, [Epidemiology of acne vulgaris]. J Dtsch Dermatol Ges, 2006. 4(1): p. 8-9.

(286) Zubair, N. and M.N. Zubair, Acne and dairy products. J Pak Med Assoc, 2011. 61(9): p. 948.

(287) Spencer, E.H., H.R. Ferdowsian, and N.D. Barnard, Diet and acne: a review of the evidence. Int J Dermatol, 2009. 48(4): p. 339-47.

(288) Veith, W.B. and N.B. Silverberg, The association of acne vulgaris with diet. Cutis, 2011. 88(2): p. 84-91.

(289) Bhate, K. and H.C. Williams, What's new in acne? An analysis of systematic reviews published in 2011-2012. Clin Exp Dermatol, 2014. 39(3): p. 273-7; quiz 277-8.

(290) Di Landro, A., et al., Family history, body mass index, selected dietary factors, menstrual history, and risk of moderate to severe acne in adolescents and young adults. J Am Acad Dermatol, 2012. 67(6): p. 1129-35.

(291) Melnik, B.C., Milk--the promoter of chronic Western diseases. Med Hypotheses, 2009. 72(6): p. 631-9.

(292) Adegboye, A.R., et al., Intake of dairy calcium and tooth loss among adult Danish men and women. Nutrition, 2012. 28(7-8): p. 779-84.

(293) Tanaka, K., Y. Miyake, and S. Sasaki, Intake of dairy products and the prevalence of dental caries in young children. J Dent, 2010. 38(7): p. 579-83.

(294) Dror, D.K. and L.H. Allen, Dairy product intake in children and adolescents in developed countries: trends, nutritional contribution, and a review of association with health outcomes. Nutr Rev, 2014. 72(2): p. 68-81.

Literatur Allergie

(295) Cordle C. T. Soy Protein Allergy: Incidence and Relative Severity. The Journal of Nutrition 2004; 134: 1213-1219.

(296) Mills E. N. C., Breiteneder H.: Food allergy and its relevance to industrial food proteins. Biotechnology Advances 2005; 23: 409-414.

(297) Sicherer S. H., Sampson H. A.: Food allergy. Journal of Allergy and Clinical Immunology 2006; 117: 470-475.

(298) EUROPÄISCHE KOMMISSION. EU-Richtlinie 2007/68/EC. 2007. Internet: http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L 2007:310:0011:01:DE:HTML.

(299) DERMA forum – Nr. 3 – März 2012: CME-zertifizierte Fortbildung für Allergologen unter dem Titel „Licht ins Dunkel der Kuhmilchallergie": Dr. Anne Feydt-Schmidt von der Pädiatrischen Gastroenterologie des Universitätsklinikums Hamburg- Eppendorf.

(300) König E. Die Milcheiweißallergie - Ursachen, Diagnose, Behandlung Milchwissenschaft Gießen, 15, 1-158 (1993).

(301) Osterwalder P., A. J. Bircher, B. Wüthrich: Gastrointestinale Kuhmilchallergie vom Spättyp. Allergologie 21, 73-77 (1998).

(302) Bahna, Heiner: Allergies to milk, Verlag Grüne und Straton, New York 1980. (303) R. Sieber et al.: Allergene in der Milch. Allergologie 1, 5-12 (2000).

(304) Otani H., X. Y. Dong, T. Hara, M. Kobayashi, H. Kayahara, A. Hosono: Specifities to milkproteins of human serum antibodies from clinically allergic patients. Milchwissenschafi 44. 267-2 70 (1989).

(305) Ng-Kwai-Hang K. F., F. Grosclaude: Genetic polymorphism of milk protein. In: Fox P.F.: Advanced Dairy Chemistry - 1 Proteins. Elsevier Applied Science, London 1992, 405-455.

(306) El-Agamy E. I.: The challenge of cow milk protein allergy. Small Ruminant Research 2007; 68: 64-72.

(307) Monaci L., Tregoat V., Van Hengel A. J., Anklam E.: Milk allergens, their characteristics and their detection in food: A review. European Food Research and Technology 2006; 223: 149-179.

(308) Spuergin P., H. Mueller, M. Walter, E. Schiltz, J. Forster: Allergenic epitopes of bovine aS1-case recognized by human IgE and IgG. Allergy 51, 306-312 (1996). (309) Ball G., M. J. Shelton, B. J. Walsh, D. J. Hill, C. S. Hosking, M. E. H. Howden. A major continueous allergenic epitope of bovine ß-lactoglobulin recognized by human IgE binding. Clin. Exp. Allergy 24, 758-764 (1994).

(310) Sélo L., L. Négroni, C. Créminon, M. Yvon, G. Peltre, J. M. Wal: Allergy to bovine beta-lactoglobulin specificity of human IgE using cyanogen bromide-derived peptides. Int. Arch. Allergy Immunol. 117, 20-28 (1998).

(311) Maynard F., R. Jost, J. M. Wal: Human IgE binding capacity of tryptic peptides from bovine alpha-lactalbumin. Int. Arch. Allergy Immunol. 113, 478-488 (1997). (312) Infante D., R. Tormo: Risk of inadequate bone mineralization in diseases involving long-term suppression of dairy products. J. Pediatr. Gastroenterol. Nutr. 30, 310-3 13 (2000).

(313) Sabbah A., S. Hassoun, M. Drouet: L'allergie au lait de vache et sa substitution par le lait de chèvre In: Freund G.: Interets nutritionnel et diététique du lait de chèvre INRA, Paris 1997, 111-118.

(314) Crawford L. V., F. T. Grogan: Allergenicity of cow's milk proteins IV. Relationship to goat's milk proteins as studied by serum-agar precipitation. J. Pediatr. 59, 347-350 (1961).

(315) Park Y. W.: Hypo-allergenic and therapeutic significance of goat's milk Small Rummant Res. 14, 151-159 (1994).

(316) Wilken-Jensen K.: (Nutrition Goat's milk can be extremely beneficial in cow's milk allergy) Sygeplejersken 84 (50), 23-24 (1984).

(317) Reinert P., A. Fabre: Utilisation du lait de chèvre chez l'enfant Expèrience de Créteil In: Freund G.: Interets nutritionnel et diététique du lait de chèvre, INRA, Paris 1997, 119-121.

(318) Jelert H. [Nutrition with goat's milk in cow's milk allergy is a poor alternative and ought to be discouraged.] Sygeplejersken 84 (50), 20-22, 24 (1984).

(319) Bellioni-Businco B., R. Paganelli, P. Lucenti, P. G., Giampietro, H. Perborn, L. Businco: Allergenicity of goat's milk in children with cow's milk allergy. J. Allergy Clin. Immunol. 103, 1191-1194 (1999).

(320) Umpierrez A., S. Quirce, F. Maranon, J. Cuesta, Y. Garcia-Villamuza, C. Lahoz, J. Sastre: Allergy to goat and sheep cheese with good tolerante to cow cheese. Clin. Exp. Allergy 29, 1064-1068 (1999).

(321) Malik Z., R. Bottomley, B. Austen: Allergenic properties of the genetic variants A and B of bovine beta-lactoglobulin. Int. Arch. Allergy Appl. Immun. 86, 245-248 (1988).

(322) Spuergin P., M. Walter, E Schiltz, K. Deichmann, J. Forster, H. Mueller: Allergenicity of alpha-caseins from cow, sheep, and goat. Allergy 52, 293-298 (1997).

(323) Bernard H., Q Créminon, L. Negroni, G. Peltre, J. M. Wal: IgE cross-reactivity with caseins from different species in humans allergic to cow's milk. Food Agric, Immunol. 11, 101-111 (1999).

(324) Restani P., A. Gaiaschi, A. Plebani, B. Beretta, G. Cavagni, A. Fiocchi, C Poiesi, T. Velona, A. G. Ugazio, C. L. Galli: Cross-reactivity between milk proteins from different animal species Clin. Exp. Allergy 29, 997-1004 (1999).

(325) Leitlinien der Gesellschaft für Pädiatrische Gastroenterologie und Ernährung (GPGE), der Gesellschaft für Pädiatrische Allergologie und Umweltmedizin (GPA) und der Ernährungskommission der Deutschen Gesellschaft für Kinder- und Jugendmedizin (DGKJ).

(326) BfR sieht Forschungsbedarf zum Einfluss der Milchverarbeitung auf das allergene Potenzial von Kuhmilch. In: Stellungnahme Nr. 021/2009 des BfR vom 13. Februar 2009.

(327) Jost R., Fritsché R., Pahud J. J. (1991): Reduction of Milk Protein Allergenicity Through Processing. In: Somogyi J. C., Müller H. R., Ockhuizen T. (eds): Food Allergy and Food Intolerance. Nutritional Aspects and Developments: Bibliotheca Nutritio et Dieta, Basel, Karger 1991, No 48: 127-137.

(328) Paschke A., Besler M. (2002): Stability of bovine allergens during food processing. Annals of Allergy, Asthma & Immunology, 89 (Suppl.): 16-20.

(329) Wal J. M. (2004): Bovine milk allergenicity. Annals of Allergy, Asthma & Immunology, 93 (Suppl. 3): S2-S11.

(330) Halken S., A. Host: How hypoallergenic are hypoallergenic cow's milk-based formulas? Allergy 52, 1175-1183 (1997).

(331) Michalski M. C. (2007): On the supposed influence of milk homogenization on the risk of CVD, diabetes and allergy. British Journal of Nutrition, 97: 598-610. (332) Irion R. (2009): Milch. http://www.alles-zur allergologie.de/Allergologie/Artikel 4053/Allergen,Allergie/Joghurt.html).

(333) Paajanen L., Tuure T., Poussa T., Korpela R. (2003): No difference in symptoms during challenges with homogenized and unhomogenized cow's milk in subjects with subjektive hypersensitivity to homogenized milk. Journal of Dairy Research, 70: 175-179.

(334) Fiocchi, A., et al., World Allergy Organization (WAO) Diagnosis and Rationale for Action against Cow's Milk Allergy (DRACMA) Guidelines. World Allergy Organ J, 2010. 3(4): p. 57-161.

Literatur Hitzebehandlung

(335) Dipl.oec.troph. Veronika Kaufmanna, Prof. Dr. Siegfrid Schererb & Prof. Dr. Ing. Ulrich Kulozika: Stoffliche Veränderungen in Konsummilch durch haltbarkeitsverlängernde Verfahren: Fakten zur Frage der Kennzeichnung von ESL- Milch. Zentralinstitut für Ernährungs- und Lebensmittelforschung, (a) Abteilung Technologie, (b) Abteilung Mikrobiologie, Technische Universität München, 85354 Freising-Weihenstephan.

(336) Strahm, W., Eberhard, P.: Milch wird hoch erhitzt oder filtriert. Alimenta. 12, 25-27 (2009). (337) Kaufmann, V. & Kulozik, U. 2006: Kombination von Mikrofiltration und thermischen Verfahren zur Haltbarkeitsverlängerung von Lebensmitteln. Chem Ing Tech, 78 (11), S. 1647-1653.

(338) Kaufmann, V. & Kulozik, U. 2007: Verfahrenskonzepte zur Herstellung von ESL- Milch – Stand der Technik und neue Optionen. dmw, 8, S. 268-271.

(339) Hülsen, U. & Rademacher, B 2005: Länger haltbare Trinkmilch - Teil 2. dmz, 20, 24-27.

(340) Max Rubner-Institut (MRI). Milch ist nicht gleich Milch - das Max Rubner- Institut informiert über die Unterschiede. Pressemitteilung des MRI vom 18.02.2009.

(341) Max Rubner-Institut (MRI). Nur geringe Unterschiede bei ESL-Milch. Pressemitteilung des MRI vom 27.07.2009.

(342) Kaufmann, V. & Kulozik, U. 2008: Verfahrenstechnische Einflussfaktoren auf die Qualität und Stabilität von ESL-Milch. dmz, 24, S. 28-30.

(343) Gallmann P., Eberhard P., Sieber R., Vor- und Nachteile der ESL (Extended Shelf Life)-Milch, Agrarforschung 8 (2001) 112-117.

(344) Rysstad G., Kolstad J., Extended shelf life milk – advances in technology, Int. J. Dairy Technol. 59 (2006) 85-96.

(345) Schwermann S., Schwenzow U., Verfahrenskonzepte zur Herstellung von ESL-Milch, Dt. Milchwirt. 59 (2008) 384-391, 428-432, 462-467.

(346) Cattaneo S., Masotti F., Pellegrino L., Effects of overprocessing on heat damage of UHT-milk, Eur. Food Res. Technol. 226 (2008) 1099-1106.

(347) Claeys W.L., Van Loey A.M., Hendrickx M.E., Intrinsic time temperature integrators for heat treatment of milk, Trends Food Sci. Technol. 13 (2002) 293-311.

(348) Hoffmann, W. et al. 2006: Processing of extended shelf life milk using microfiltration. Int J Dairy Tec, 59 (4), S. 229-235.

(349) Gallmann P.U., Eberhard P., Sieber R.: Vor- und Nachteile der ESL (Extended Shelf Life)-Milch. Agrarforschung 8, 112-117 (2001) und FAM-Information Nr. 423 (2001) sowie unveröffentlichte Untersuchungsergebnisse ALP 2003.

(350) Eberhard P., Bütikofer U., Sieber R.: Vitamine in gelagerter hocherhitzter Milch; Agrarforschung 10, 62-65 (2003).

(351) Walther, B.: Nährstoffverlust durch Hocherhitzung. Alimenta. 12, 28-29 (2009).

(352) Kessler, H.G. 1996: Lebensmittel- und Bioverfahrenstechnik – Molkereitechnologie. Verlag A. Kessler, München.

(353) Helmut K. Mayer, Bernd Raba, Johannes Meier, und Anita Schmid: Extended Shelf Life (ESL)-Milch: Wertvolles Milchprodukt oder Milch mit übermäßiger Hitzebelastung? Department für Lebensmittelwissenschaften und -technologie, AG Lebensmittelchemie, Universität für Bodenkultur Wien, Muthgasse 11, 1190 Wien.

(354) Horak, F.P. 1980: Über die Reaktionskinetik der Sporenabtötung und chemischer Veränderungen bei der thermischen Haltbarmachung von Milch zur Optimierung von Erhitzungsverfahren. Diss. TU München-Weihenstephan.

(355) Fink, R. 1984: Über lagerungsbedingte Veränderungen von UHT-Vollmilch und deren reaktionskinetische Beschreibung. Diss. TU München-Weihenstephan. (356) Peter Gallmann, Pius Eberhard, Robert Sieber: Vor- und Nachteile der ESL-(Extended Shelf Life)-Milch. AGRARForschung 8, 3, 112-117 (2001).

Literatur Schimmelkäse

(357) http://www.spektrum.de/lexikon/biologie/kaese/35550

(358) Spektrum der Wissenschaft: Fleißige Mikroben - Dass aus Milch ein leckerer Brotbelag wird, verdanken wir Bakterien und Schimmelpilzen.

(359) http://www.chemieunterricht.de/dc2/milch/schimmel.htm

(360) http://de.wikipedia.org/wiki/Edelschimmel

(361) http://www.aponet.de/aktuelles/ihr-apotheker-informiert/2012-09-kaese-mit- schimmel-gefaehrlich-oder-lecker.html

(362) Webseite aid – www.aid.de

(363) Bergader Käse Wissen: http://www.bergader.de/index.php?id=27 (364) Belitz, Grosch, Schieberle: Lehrbuch der Lebensmittelchemie

Literatur Rohmilch

(365) http://diepresse.com/home/leben/gesundheit/541256/Nach- ListerienToten_Keine-Angst-vor-dem-Kaese

(366) Institut für Milchhygiene an der Veterinärmedizinischen Universität Wien: http://www.vetmeduni.ac.at/de/milchhygiene/

(367) Österreichische Agentur für Gesundheit und Ernährungssicherheit: http://www.ages.at/

(368) LVBM,LandesvereinigungderBayerischenMilchwirtschaft

(369) Robert-Koch-Institut: http://www.rki.de/DE/Content/Infekt/EpidBull/Merkblaetter/Ratgeber_Listeriose. html http://www.rki.de/DE/Content/Infekt/EpidBull/Merkblaetter/Ratgeber_EHEC.html http://edoc.rki.de/oa/articles/reDjlJPetiU/PDF/228f4DG5rksvQ.pdf

(370) http://www.laves.niedersachsen.de/portal/live.php?navigation_id=20111&article_i d=73633&_psmand=23

(371) http://www.verbraucherservice-bayern.de/information/ernaehrung-und-gesundheit/meldung/article/Rohmilchkaese-delikat-aber-nicht-fuer-jeden- geeignet/

(372) http://www.spektrum.de/news/die-rohmilch-machts/1184008

(373) http://www.ugb.de/forschung-studien/listerien-bakterien-mit-gefaehrlicher- wirkung/

(374) Bundesinstitut für Risikobewertung Berlin: http://www.bfr.bund.de/de/lebensmittelbedingte_krankheitsausbrueche-7608.html http://www.bfr.bund.de/cm/350/verbrauchertipps_schutz_vor_lebensmittelbedin gten_infektionen_mit_listerien.pdf

(375) Riedler, J. et al.: Exposure to farming in early life and development of asthma and allergy: a cross-sectional survey. In: Lancet 6, S. 1129–1133, 2001

(376) Strachan, D., Perkin, M.: Which aspects of the farming lifestyle explain the inverse association with childhood alley? In: J Allergy Clin Immunol. 117, S. 1374–1381, 2006

(377) von Mutius E et al.: THE PASTURE project: EU support for the improvement of knowledge about risk factors and preventive factors for atopy in Europe. In: Allergy 61, S. 407–413, 2006

(378) Loss, G. et al.: Prenatal and early-life exposures alter expression of innate immunity genes: the PASTURE cohort study. In: J Allergy Clin Immunol. 130; S. 523–530, 2012

(379) Loss, G. et al.: The protective effect of farm milk consumption on childhood asthma and atopy: The GABRIELA study. In: J Allergy Clin Immunol 128, S. 766–773, 2011 (380) van Neerven, R. et al.: Which factors in raw Cow's milk contribute to protection against allergies? In: J Allergy Clin Immunol 130; S. 853–858, 2012

(381) Thijs, C. et al.: Fatty acids in breast milk and development of atopic eczema and allergic sensitization in infancy. In: Allergy 66, S. 58–67, 2011

Literatur Milch und Sport

(382) Brian D. Roy. Journal of the International Society of Sports Nutrition 2008, 5:15 doi:10.1186/1550-2783-5-15

(383) Nutrient Timing. Basic Health Publications, 2004

(384) Bos C, Metges CC, Gaudichon C, Petzke KJ, Pueyo ME, Morens C, Everwand J, Benamouzig R, Tome D: Postprandial kinetics of dietary amino acids are the main determinant of their metabolism after soy or milk protein ingestion in humans. J Nutr 2003, 133:1308-1315.

(385) Kraemer WJ, Duncan ND, Volek JS: Resistance training and elite athletes: adaptations and program considerations. J Orthop Sports Phys Ther 1998, 28:110-119.

(386) Phillips SM, Tipton KD, Aarsland A, Wolf SE, Wolfe RR: Mixed muscle protein synthesis and breakdown after resistance exercise in humans. Am J Physiol 1997, 273:E99-107.

(387) Wilkinson SB, Tarnopolsky MA, Macdonald MJ, Macdonald JR, Armstrong D, Phillips SM: Consumption of fluid skim milk promotes greater muscle protein accretion after resistance exercise than does consumption of an isonitrogenous and isoenergetic soy-protein beverage. Am J Clin Nutr 2007, 85:1031-1040.

(388) Janet Walberg Rankin, PhD, Lauren P. Goldman, MS, Michael J. Puglisi, MS, Sharon M. Nickols-Richardson, PhD, Carrie P. Earthman, PhD, Frank C. Gwazdauskas, PhD. Effect of Post-Exercise Supplement Consumption on Adaptations to Resistance Training. Journal of the American College of Nutrition, Vol. 23, No. 4, 322–330 (2004).

(389) Hartman JW, Tang JE, Wilkinson SB, Tarnopolsky MA, Lawrence RL, Fullerton AV, Phillips SM: Consumption of fat-free fluid milk after resistance exercise promotes greater lean mass accretion than does consumption of soy or carbohydrate in young, novice, male weightlifters. Am J Clin Nutr 2007, 86:373-381.

(390) Stuart M. Phillips, PhD, FACN, Joseph W. Hartman, MSc, and Sarah B. Wilkinson, MSc. Dietary Protein to Support Anabolism with Resistance Exercise in Young Men. Journal of the American College of Nutrition, Vol. 24, No. 2, 134S–139S (2005).

(391) Zemel MB: Role of calcium and dairy products in energy partitioning and weight management. Am J Clin Nutr 2004, 79:907S-912S.

(392) Miller SL, Gaine PC, Maresh CM, Armstrong LE, Ebbeling CB, Lamont LS, Rodriguez NR: The effects of nutritional supplementation throughout an endurance run on leucine kinetics during recovery. Int J Sport Nutr Exerc Metab 2007, 17:456-467.

(393) Lee JK, Maughan RJ, Shirreffs SM, Watson P: Effects of milk ingestion on prolonged exercise capacity in young, healthy men. Nutrition 2008, 24:340-347.

(394) Karp JR, Johnston JD, Tecklenburg S, Mickleborough TD, Fly AD, Stager JM: Chocolate milk as a post-exercise recovery aid. Int J Sport Nutr Exerc Metab 2006, 16:78-91.

(395) John Seifert, Joseph Harmon, and Patty DeClercq. Protein Added to a Sports Drink Improves Fluid Retention. International Journal of Sport Nutrition and Exercise Metabolism, 2006, 16, 420-429.

(396) Shirreffs S.M., Watson P., Maughan R.J. (2007). Milk as an effective post-exercise rehydration drink. British Journal of Nutrition 98, 173–180.

(397) Thiara, G. and R.D. Goldman, Milk consumption and mucus production in children with asthma. Can Fam Physician, 2012. 58(2): p. 165-6.

(398) Wüthrich, B., et al., Milk consumption does not lead to mucus production or occurrence of asthma. J Am Coll Nutr, 2005. 24(6 Suppl): p. 547s-55s.