

Candida feature:

Hannah Braye:

- 1 Spampinato C, Leonardi D. Candida infections, causes, targets, and resistance mechanisms: traditional and alternative antifungal agents. *Biomed Res Int* 2013; **2013**: 204237.
- 2 Schulze J, Sonnenborn U. Yeasts in the gut: from commensals to infectious agents. *Dtsch Arztebl Int* 2009; **106**: 837–42.
- 3 Khodavandi A, Alizadeh F, Harmal NS, *et al.* Expression analysis of SIR2 and SAPs1-4 gene expression in *Candida albicans* treated with allicin compared to fluconazole. *Trop Biomed* 2011; **28**: 589–98.
- 4 Cater RE. Chronic intestinal candidiasis as a possible etiological factor in the chronic fatigue syndrome. *Med Hypotheses* 1995; **44**: 507–15.
- 5 Mayer FL, Wilson D, Hube B. *Candida albicans* pathogenicity mechanisms. *Virulence* 2013; **4**: 119–28.
- 6 Bermudez-Brito M, Plaza-Díaz J, Muñoz-Quezada S, Gómez-Llorente C, Gil A. Probiotic mechanisms of action. *Ann Nutr Metab* 2012; **61**: 160–74.
- 7 Vylkova S, Carman AJ, Danhof HA, Collette JR, Zhou H, Lorenz MC. The Fungal Pathogen *Candida albicans* Autoinduces Hyphal Morphogenesis by Raising Extracellular pH. *MBio* 2011; **2**: e00055-11-e00055-11.
- 8 Santana IL, Gonçalves LM, de Vasconcellos AA, da Silva WJ, Cury JA, Del Bel Cury AA. Dietary carbohydrates modulate *Candida albicans* biofilm development on the denture surface. *PLoS One* 2013; **8**: e64645.
- 9 Rolando N, Harvey F, Brahm J, *et al.* Fungal infection: a common, unrecognised complication of acute liver failure. *J Hepatol* 1991; **12**: 1–9.
- 10 Paillaud E, Merlier I, Dupeyron C, Scherman E, Poupon J, Bories P-N. Oral candidiasis and nutritional deficiencies in elderly hospitalised patients. *Br J Nutr* 2004; **92**: 861–7.
- 11 Spinillo A, Capuzzo E, Nicola S, Baltaro F, Ferrari A, Monaco A. The impact of oral contraception on vulvovaginal candidiasis. *Contraception* 1995; **51**: 293–7.
- 12 Casqueiro J, Casqueiro J, Alves C. Infections in patients with diabetes mellitus: A review of pathogenesis. *Indian J Endocrinol Metab* 2012; **16 Suppl 1**: S27-36.
- 13 Murray MT, Pizzorno JE. The encyclopedia of natural medicine.

- Atria Books, 2012
<https://books.google.co.uk/books?id=UbSFMeozHmIC&pg=PA1076&lpg=PA1076&dq=Baumann+DS,+Hagglund+HE+Correlation+between+certain+polysystem+chronic+complaints+and+an+enzyme+immunoassay+with+antigens+of+candida+albicans&source=bl&ots=shn2wDwrEO&sig=V5MSUZ9GCyc> (accessed Nov 30, 2017).
- 14 Lord RS, Bralley JA. Clinical applications of urinary organic acids. Part 2. Dysbiosis markers. *Altern. Med. Rev.* 2008; **13**: 292–306.
 - 15 Bayan L, Koulivand PH, Gorji A. Garlic: a review of potential therapeutic effects. *Avicenna J phytomedicine* 2014; **4**: 1–14.
 - 16 Gunsalus KTW, Tornberg-Belanger SN, Matthan NR, Lichtenstein AH, Kumamoto CA. Manipulation of Host Diet To Reduce Gastrointestinal Colonization by the Opportunistic Pathogen *Candida albicans*. *mSphere* 2016; **1**. DOI:10.1128/mSphere.00020-15.
 - 17 Kumamoto CA. Inflammation and gastrointestinal *Candida* colonization. *Curr Opin Microbiol* 2011; **14**: 386–91.
 - 18 Qiu F, Liang C-L, Liu H, *et al.* Impacts of cigarette smoking on immune responsiveness: Up and down or upside down? *Oncotarget* 2017; **8**: 268–84.
 - 19 Muzurović S, Hukić M, Babajić E, Smajić R. The relationship between cigarette smoking and oral colonization with *Candida* species in healthy adult subjects. *Med Glas (Zenica)* 2013; **10**: 397–9.
 - 20 Cavallito CJ, Bailey JH. Allicin, the Antibacterial Principle of *Allium sativum*. I. Isolation, Physical Properties and Antibacterial Action. *J Am Chem Soc* 1944; **66**: 1950–1.
 - 21 Meriga B, Mopuri R, MuraliKrishna T. Insecticidal, antimicrobial and antioxidant activities of bulb extracts of *Allium sativum*. *Asian Pac J Trop Med* 2012; **5**: 391–5.
 - 22 Khodavandi A, Harmal NS, Alizadeh F, *et al.* Comparison between allicin and fluconazole in *Candida albicans* biofilm inhibition and in suppression of HWP1 gene expression. *Phytomedicine* 2011; **19**: 56–63.
 - 23 Matsubara VH, Wang Y, Bandara HMHN, Mayer MPA, Samaranayake LP. Probiotic lactobacilli inhibit early stages of *Candida albicans* biofilm development by reducing their growth, cell adhesion, and filamentation. *Appl Microbiol Biotechnol* 2016; **100**: 6415–26.
 - 24 Chapman CMC, Gibson GR, Rowland I. Health benefits of probiotics: Are mixtures more effective than single strains? *Eur J Nutr* 2011; **50**: 1–17.
 - 25 Falagas ME, Betsi GI, Athanasiou S. Probiotics for prevention of

- recurrent vulvovaginal candidiasis: a review. *J Antimicrob Chemother* 2006; **58**: 266–72.
- 26 Reid G, Bruce AW, Fraser N, Heinemann C, Owen J, Henning B. Oral probiotics can resolve urogenital infections. *FEMS Immunol Med Microbiol* 2001; **30**: 49–52.

Egzona Makolli:

- 1). Huffnagle GB and Noverr MC (2013). The emerging world of the fungal microbiome. *Trends Microbiol* 21(7): 334-341.
- 2). Mayer Lf, Wilson D and Hube B (2013). *Candida albicans* pathogenicity mechanisms. *Virulence* 4:2, 119-128
- 3). Brown K, DeCoffe D, Molcan E and Gibson DL (2012). Diet-induced dysbiosis of the intestinal microbiota and the effects on immunity and disease. *Nutrients* 4, 1095-1119
- 4). Langdon M, Crook N and Dantas G (2016). The effects of antibiotics on the microbiome throughout development and alternative approaches for therapeutic modulation. *Genome Medicine* 8:39, 16-29
- 5). Wolkow A, Aisbett B, Reynolds J, Ferguson SA and Main LC (2015). Relationships between inflammatory cytokine and cortisol responses in firefighters exposed to stimulate wildfire suppression work and sleep restriction. *Physiological reports*, 3(11)
- 6). Wahyuningsih R et al., (2000). Simple and rapid detection of *Candida albicans* DNA in serum by PCR for diagnosis of invasive candidiasis. *Journal of Clinical Microbiology*, 38(8), 3016-3021

Vesna Manasieva:

- Ankri, S., Mirelman, D. (1999). Antimicrobial properties of Allicin from garlic. *Microbes and infection*. 1 (2), 125-129.
- Beck-Sague C. M., Jarvis T. R. (1993). Secular trends in the epidemiology of nosocomial fungal infections in the United States. *Journal of Infectious Diseases*. 167 (5), 1247–1251.
- Cuenca-Estrella, M. et al. (2012). ESCMID† guideline for the diagnosis and management of *Candida* diseases 2012: diagnostic procedures. *Clinical Microbiology infections*. 18 (7), 9-18.
- Fidel, P.L., Vazquez, J.A., Sobel, J.D. (1999). *Candida*: Review of Epidemiology, Pathogenesis, and Clinical Disease. *Clinical Microbiology*. 12 (1), 80-96.
- Hatakka, K., Ahola, A.J. et al. (2007). Probiotics Reduce the Prevalence of Oral *Candida* in the Elderly—a Randomized Controlled Trial. *Journal of Dental Research*. 1 (7), 213-232.
- Hemila, H. (2017). Vitamin C and Infections. *Nutrients*. 9 (4), 339-345.

- Kalembe, D., Kunicka, A. (2003) Antibacterial and antifungal properties of essential oils. *Curr. Med. Chem.* 10 (12), 813–829.
- Odds F. C. (1998) Ecology and Epidemiology of Candidiasis. *University Park Press*, Baltimore.
- Yera, H., Sendid, B. *et al.* (2001). Contribution of Serological Tests and Blood Culture to the Early Diagnosis of Systemic Candidiasis. *European Journal of Clinical Microbiology and Infectious Diseases.* 20 (12), 864-870.

Skin conditions feature:

Hannah Braye:

- 1 Hay RJ, Johns NE, Williams HC, *et al.* The Global Burden of Skin Disease in 2010: An Analysis of the Prevalence and Impact of Skin Conditions. *J Invest Dermatol* 2014; **134**: 1527–34.
- 2 Acne vulgaris. <http://bestpractice.bmj.com/best-practice/monograph/101/basics/epidemiology.html> (accessed July 24, 2017).
- 3 Farid R, Ahanchian H, Jabbari F, Moghiman T. Effect of a new synbiotic mixture on atopic dermatitis in children: a randomized-controlled trial. *Iran J Pediatr* 2011; **21**: 225–30.
- 4 Baron SE, Cohen SN, Archer CB, Hay RJ. Guidance on the diagnosis and clinical management of atopic eczema. *Clin Exp Dermatol* 2012; **37**: 7–12.
- 5 Levy ML, Price D, Zheng X, Simpson C, Hannaford P, Sheikh A. Inadequacies in UK primary care allergy services: national survey of current provisions and perceptions of need. *Clin <html_ent glyph='@amp;' ascii='&'/> Exp Allergy* 2004; **34**: 518–9.
- 6 White Book on Allergy. 2011 DOI:10.1186/1939-4551-6-6.
- 7 Rook GAW, Raison CL, Lowry CA. Microbial ‘old friends’, immunoregulation and socioeconomic status. *Clin Exp Immunol* 2014; **177**: 1–12.
- 8 Saarinen UM, Kajosaari M. Breastfeeding as prophylaxis against atopic disease: prospective follow-up study until 17 years old. *Lancet (London, England)* 1995; **346**: 1065–9.
- 9 Adebamowo CA, Spiegelman D, Danby FW, *et al.* High school dietary dairy intake and teenage acne. *J Am Acad Dermatol* 2005; **52**: 207–14.
- 10 Vitamin D — Health Professional Fact Sheet. <https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/> (accessed July 24, 2017).
- 11 Sloper KS, Wadsworth J, Brostoff J. Children with atopic eczema. I: Clinical response to food elimination and subsequent double-

- blind food challenge. *Q J Med* 1991; **80**: 677–93.
- 12 Salminen SJ, Gueimonde M, Isolauri E. Probiotics that modify disease risk. *J Nutr* 2005; **135**: 1294–8.
 - 13 Bowe WP, Logan AC. Acne vulgaris, probiotics and the gut-brain-skin axis - back to the future? *Gut Pathog* 2011; **3**: 1.
 - 14 Hsieh C-Y, Osaka T, Moriyama E, Date Y, Kikuchi J, Tsuneda S. Strengthening of the intestinal epithelial tight junction by *Bifidobacterium bifidum*. *Physiol Rep* 2015; **3**. DOI:10.14814/phy2.12327.
 - 15 Vighi G, Marcucci F, Sensi L, Di Cara G, Frati F. Allergy and the gastrointestinal system. *Clin Exp Immunol* 2008; **153 Suppl 1**: 3–6.
 - 16 Purchiaroni F, Tortora A, Gabrielli M, *et al.* The role of intestinal microbiota and the immune system. *Eur Rev Med Pharmacol Sci* 2013; **17**: 323–33.
 - 17 Song H, Yoo Y, Hwang J, Na Y-C, Kim HS. Faecalibacterium prausnitzii subspecies-level dysbiosis in the human gut microbiome underlying atopic dermatitis. *J Allergy Clin Immunol* 2016; **137**: 852–60.
 - 18 Nylund L, Satokari R, Nikkilä J, *et al.* Microarray analysis reveals marked intestinal microbiota aberrancy in infants having eczema compared to healthy children in at-risk for atopic disease. *BMC Microbiol* 2013; **13**: 12.
 - 19 Kim NY, Ji GE. Effects of probiotics on the prevention of atopic dermatitis. *Korean J Pediatr* 2012; **55**: 193–201.
 - 20 Rather IA, Bajpai VK, Kumar S, Lim J, Paek WK, Park Y-H. Probiotics and Atopic Dermatitis: An Overview. *Front Microbiol* 2016; **7**: 507.
 - 21 Roudsari MR, Karimi R, Sohrabvandi S, Mortazavian AM. Health Effects of Probiotics on the Skin. *Crit Rev Food Sci Nutr* 2015; **55**: 1219–40.

Vesna Manasieva:

Bowe, W.P., Logan, A.C (2011). Acne vulgaris, probiotics and the gut-brain-skin axis - back to the future. *Gut Pathogens*. 3 (11), 21-27.

Burris, J., Woolf, K. *et al.* (2013). Acne: The Role of Medical Nutrition Therapy. *Journal of the Academy of Nutrition and Dietetics*. 113 (3), 416 – 430.

Cordain, L., Hurtado, M. *et al.* (2002). Acne vulgaris: a disease of Western civilization. *Journal of Clinical Dermatology*. 138 (12), 1584-1590.

Hay, R.J., Johns, N.E. *et al.* (2014). The Global Burden of Skin Disease in 2010: An Analysis of the Prevalence and Impact of Skin Conditions. *Journal of Investigative Dermatology*. 134 (6), 1527-1534.

Murray, C.J.L., Richards, M.A., Newton J.N. *et al.* (2016). UK health performance: findings of the Global Burden of Disease Study 2016. *Lancet*. 23 (381), 997-1020.

Scholfield, J.K., Grindlay D., Williams H.C. (2009). Skin Conditions in the UK: A Health Needs Assessment. University of Nottingham, *Centre of Evidence Based Dermatology UK*; Nottingham, UK.

Smith, R.N., Mann, N.J. *et al.* (2007). A low-glycaemic-load diet improves symptoms in acne vulgaris patients: a randomized controlled trial. *The American Journal of Clinical Nutrition*. 86 (7), 107 – 115.

Vitamin K feature:

Egzona Makolli:

1). Suttie JW. Vitamin K. In: Coates PM, Betz JM, Blackman MR, *et al.*, eds. *Encyclopedia of Dietary Supplements*. 2nd ed. London and New York: Informa Healthcare; 2010:851-60.

2). Institute of Medicine. *Dietary reference intakes for vitamin A, vitamin K, arsenic, boron, chromium, copper, iodine, iron, manganese, molybdenum, nickel, silicon, vanadium, and zinc*. Washington, DC: National Academy Press; 2001.

3). Heber D, Greenway FL, Kaplan LM, Livingston E, Salvador J, Still C, *et al.* Endocrine and nutritional management of the post-bariatric surgery patient: an Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab* 2010;95:4823-43.

4). Suttie JW. Vitamin K. In: Ross AC, Caballero B, Cousins RJ, Tucker KL, Ziegler TR, eds. *Modern Nutrition in Health and Disease*. 11th ed. Baltimore, MD: Lippincott Williams & Wilkins; 2014:305-16.

5). Schurgers LJ, Teunissen KJ, Hamulyak K, Knapen MH, Vik H, Vermeer C. Vitamin K-containing dietary supplements: comparison of synthetic vitamin K1 and natto-derived menaquinone-7. *Blood* 2007;109:3279-83.

Jenny Logan:

(1) *Katarzyna Maresz, PhD; Proper Calcium Use: Vitamin K2 as a Promoter of Bone and Cardiovascular Health; Integr Med (Encinitas). 2015 Feb; 14(1): 34-39.*

(2) *Knapen MHJ et al.; Osteoporosis Int. 2013 Sept;24(9):2499-507*

(3) *Theuwissen E et al.; Food and Function; 2004;5(2):229-*

- (4) *Davies JH, Evans BAJ, Gregory JW. Bone mass acquisition in healthy children. Archives of Disease in Childhood 2005;90:373-378.*
- (5) *Presented at Intl Conf on Children's Bone Health, Wurzburg, Germany, June 2017.*
- (6) *Doherty TM et al; Calcification in atherosclerosis: bone biology and chronic inflammation at the arterial crossroads, Proc Natl Acad Sci USA. 2003; 100:11201-11206*
- (7) *Schurgers LJ et al; Matrix GLA protein: The calcification inhibitor in need of vitamin K; Thromb Haemostt; 2008; 100:593-600*
- (8) *Geleijnse JM et al.; Dietary intake of menaquinone is associated with a reduced risk of coronary heart disease: the Rotterdam Study; J Nutr. 2004 Nov;134(11):3100-5.*
- (9) *Gast GC et al; A high menaquinone intake reduces the risk of coronary heart disease; Nutr Metab Cardiovasc D. 2009; 19:504-10*
- (10) *Knapen MH et al; Menaquinone-7 supplementation improves arterial stiffness in healthy postmenopausal women. A double-blind randomised clinical trial; Thromb Haemost. 2015 May;113(5):1135-44. doi: 10.1160/TH14-08-0675. Epub 2015 Feb 19*
- (11) *Sy-Jou Chen, MD et al; Osteoporosis Is Associated With High Risk for Coronary Heart Disease: A Population-Based Cohort Study; Medicine (Baltimore). 2015 Jul; 94(27): e1146.*
- (12) *Shea MK et al. J Nutr. 2011 Aug; 141(8):1529-34*

Peter van Hogerhuis:

[1] Knapen, M. H. J. et al. Three-year low-dose menaquinone-7 supplementation helps decrease bone loss in healthy postmenopausal women.

Osteoporosis International as an Online First Article (DOI 10.1007/s00198-013-2325-6.

<http://link.springer.com/article/10.1007/s00198-013-2325-6>

[2] M. H. J. Knapen, L. A. J. L. M. Braam, N. E. Drummen, O. Bekers, A. P. G. Hoeks, C. Vermeer. Menaquinone-7 supplementation improves arterial stiffness in healthy postmenopausal women: double-blind randomized clinical trial. *Thrombosis and Haemostasis*. 2015;113: February 19, 2015.

Ingredient spotlight:

- 1 Jeejeebhoy KN, Chu RC, Marliss EB, Greenberg GR, Bruce-Robertson A. Chromium deficiency, glucose intolerance, and neuropathy reversed by chromium supplementation, in a patient receiving long-term total parenteral nutrition. *Am J Clin Nutr* 1977; **30**: 531–8.
- 2 Vincent JB. Elucidating a biological role for chromium at a molecular level. *Acc Chem Res* 2000; **33**: 503–10.
- 3 Cefalu WT, Hu FB. Role of chromium in human health and in diabetes. *Diabetes Care* 2004; **27**: 2741–51.
- 4 Vincent JB. Mechanisms of chromium action: low-molecular-weight chromium-binding substance. *J Am Coll Nutr* 1999; **18**: 6–12.
- 5 Nutrition and Health Claims - European Commission. http://ec.europa.eu/food/safety/labelling_nutrition/claims/register/public/?event=register.home (accessed Dec 18, 2017).
- 6 Racek J, Sindberg CD, Moesgaard S, *et al.* Effect of Chromium-Enriched Yeast on Fasting Plasma Glucose, Glycated Haemoglobin and Serum Lipid Levels in Patients with Type 2 Diabetes Mellitus Treated with Insulin. *Biol Trace Elem Res* 2013; **155**: 1–4.
- 7 Ashoush S, Abou-Gamrah A, Bayoumy H, Othman N. Chromium picolinate reduces insulin resistance in polycystic ovary syndrome: Randomized controlled trial. *J Obstet Gynaecol Res* 2016; **42**: 279–85.
- 8 Fazelian S, Rouhani MH, Bank SS, Amani R. Chromium supplementation and polycystic ovary syndrome: A systematic review and meta-analysis. *J Trace Elem Med Biol* 2017; **42**: 92–6.
- 9 Perricone N V., Bagchi D, Echard B, Preuss HG. Blood pressure lowering effects of niacin-bound chromium(III) (NBC) in sucrose-fed rats: Renin–angiotensin system. *J Inorg Biochem* 2008; **102**: 1541–8.
- 10 Geohas J, Daly A, Juturu V, Finch M, Komorowski JR. Chromium Picolinate and Biotin Combination Reduces Atherogenic Index of Plasma in Patients with Type 2 Diabetes Mellitus: A Placebo-Controlled, Double-Blinded, Randomized Clinical Trial. *Am J Med Sci* 2007; **333**: 145–53.
- 11 Saltiel AR, Kahn CR. Insulin signalling and the regulation of glucose and lipid metabolism. *Nature* 2001; **414**: 799–806.
- 12 Pittler MH, Stevinson C, Ernst E. Chromium picolinate for reducing body weight: Meta-analysis of randomized trials. *Int J Obes* 2003; **27**: 522–9.
- 13 Anton SD, Morrison CD, Cefalu WT, *et al.* Effects of chromium picolinate on food intake and satiety. *Diabetes Technol Ther* 2008; **10**: 405–12.
- 14 Brownley KA, Von Holle A, Hamer RM, La Via M, Bulik CM. A double-blind, randomized pilot trial of chromium picolinate for binge eating disorder: Results of the Binge Eating and Chromium (BEACH) Study. *J*

- Psychosom Res* 2013; **75**: 36–42.
- 15 Chromium | Linus Pauling Institute | Oregon State University. <http://lpi.oregonstate.edu/mic/minerals/chromium> (accessed Dec 18, 2017).
- 16 Dietary Supplement Fact Sheet: Chromium — Health Professional Fact Sheet. <https://ods.od.nih.gov/factsheets/Chromium-HealthProfessional/#en13> (accessed Dec 18, 2017).
- 17 Lai M-H. Antioxidant effects and insulin resistance improvement of chromium combined with vitamin C and e supplementation for type 2 diabetes mellitus. *J Clin Biochem Nutr* 2008; **43**: 191–8.
- 18 Bolkent S, Yanardag R, Bolkent S, Döger MM. Beneficial Effects of Combined Treatment with Niacin and Chromium on the Liver of Hyperlipemic Rats. *Biol Trace Elem Res* 2004; **101**: 219–30.
- 19 Kozlovsky AS, Moser PB, Reiser S, Anderson RA. Effects of diets high in simple sugars on urinary chromium losses. *Metabolism* 1986; **35**: 515–8.
- 20 Lukaski HC, Bolonchuk WW, Siders WA, Milne DB. Chromium supplementation and resistance training: effects on body composition, strength, and trace element status of men. *Am J Clin Nutr* 1996; **63**: 954–65.
- 21 Davies S, Howard JM, Hunnisett A, Howard M. Age-related decreases in chromium levels in 51,665 hair, sweat, and serum samples from 40,872 patients—Implications for the prevention of cardiovascular disease and type II diabetes mellitus. *Metabolism* 1997; **46**: 469–73.
- 22 Chromium | University of Maryland Medical Center. <http://www.umm.edu/health/medical/altmed/supplement/chromium> (accessed Dec 18, 2017).
- 23 Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Washington, D.C.: National Academies Press, 2001 DOI:10.17226/10026.
- 24 Vaidyanathan VG, Asthana Y, Nair BU. Importance of ligand structure in DNA/protein binding, mutagenicity, excision repair and nutritional aspects of chromium(III) complexes. *Dalton Trans* 2013; **42**: 2337–46.
- 25 Ali A, Ma Y, Reynolds J, Wise JP, Inzucchi SE, Katz DL. Chromium effects on glucose tolerance and insulin sensitivity in persons at risk for diabetes mellitus. *Endocr Pract* 2011; **17**: 16–25.