

Ingredient spotlight:

1. Handa JT. How does the macula protect itself from oxidative stress? *Mol Aspects Med*, 2012;33(4):418-435.
2. Wong WL et al. Global prevalence of age-related macular degeneration and disease burden projection for 2020 and 2040: a systematic review and meta-analysis. *The Lancet*, 2014;2(2):e106-e116.
3. de Jong PT. Age-related macular degeneration. *N Engl J Med*, 2006;355:1474-1485.
4. Chalam KV et al. A review: role of ultraviolet radiation in age-related macular degeneration. *Eye Contact Lens*. 2011;37(4):225-32.
5. Nguyen T et al. Regulatory mechanisms controlling gene expression mediated by the antioxidant response element. *Annu Rev Pharmacol Toxicol*. 2003;43:233-260.
6. Bernstein, P.S., et al., Lutein, zeaxanthin, and meso-zeaxanthin: The basic and clinical science underlying carotenoid-based nutritional interventions against ocular disease, *Progress in Retinal and Eye Research* 2016;50:34-66.
7. Tan JS et al. Dietary antioxidants and the long-term incidence of age-related macular degeneration: the Blue Mountains Eye Study. *Ophthalmology*. 2008;115(2):334-41.
8. van Leeuwen R et al. Dietary intake of antioxidants and risk of age-related macular degeneration. *JAMA*. 2005;294(24):3101-3107.
9. Age-Related Eye Disease Study Research Group. A Randomized, Placebo-Controlled, Clinical Trial of High-Dose Supplementation With Vitamins C and E, Beta Carotene, and Zinc for Age-Related Macular Degeneration and Vision Loss: AREDS Report No. 8. *Arch Ophthalmol*. 2001;119(10):1417-1436.
10. The Age-Related Eye Disease Study 2 (AREDS2) Research Group. Lutein + zeaxanthin and omega-3 fatty acids for age-related macular degeneration: The Age-Related Eye Disease Study 2 (AREDS2) randomized clinical trial. *JAMA*. 2013;309(19):2005-2015.
11. Moeller SM et al. The potential role of dietary xanthophylls in cataract and age-related macular degeneration. *J Am Coll Nutr*. 2000;19(5 Suppl):522S-527S.
12. Moeller SM et al. Associations between intermediate age-related macular degeneration and lutein and zeaxanthin in the Carotenoids in Age-related Eye Disease Study (CAREDS): ancillary study of the Women's Health Initiative. *Arch Ophthalmol*. 2006;124(8):1151-62.

13. Mares JA et al. Predictors of optical density of lutein and zeaxanthin in retinas of older women in the Carotenoids in Age-Related Eye Disease Study, an ancillary study of the Women's Health Initiative. *Am J Clin Nutr*. 2006 Nov;84(5):1107-22.
14. Souied EH et al. Omega-3 Fatty Acids and Age-Related Macular Degeneration. *Ophthalmic Res*. 2015;55(2):62-69.
15. Norkus EP et al. Serum Lutein Response Is Greater from Free Lutein Than from Esterified Lutein during 4 Weeks of Supplementation in Healthy Adults. *J Am Coll Nutr*. 2010;29(6):575-85.

Immune health:

Natalie Lamb:

- 1 Vighi G, Marcucci F, Sensi L, Di Cara G, Frati F. Allergy and the gastrointestinal system. *Clin Exp Immunol* 2008; **153**: 3–6.
- 2 Rennard BO, Ertl RF, Gossman GL, Robbins RA, Rennard SI. Chicken Soup Inhibits Neutrophil Chemotaxis In Vitro. *Chest* 2000; **118**: 1150–7.
- 3 Mousa HA-L. Prevention and Treatment of Influenza, Influenza-Like Illness, and Common Cold by Herbal, Complementary, and Natural Therapies. *J Evid Based Complementary Altern Med* 2017; **22**: 166–74.
- 4 Wolvers D, Antoine J-M, Myllyluoma E, Schrezenmeir J. The Journal of Nutrition Supplement: Guidance for Assessing Probiotics Beneficial Effects—How to Fill the GAP Guidance for Substantiating the Evidence for Beneficial Effects of Probiotics: Prevention and Management of Infections by Probiotics 1–3. DOI:10.3945/jn.109.113753.
- 5 Baron M. A patented strain of *Bacillus coagulans* increased immune response to viral challenge. *Postgrad Med* 2009; **121**: 114–8.
- 6 Davidson LE, Fiorino A-M, Snyderman DR, Hibberd PL. Lactobacillus GG as an Immune Adjuvant for Live Attenuated Influenza Vaccine in Healthy Adults: A Randomized Double Blind Placebo Controlled Trial HHS Public Access. *Eur J Clin Nutr* 2011; **65**: 501–7.
- 7 de Vrese M, Winkler P, Rautenberg P, et al. Effect of Lactobacillus gasseri PA 16/8, Bifidobacterium longum SP 07/3, B. bifidum MF 20/5 on common cold episodes: a double blind, randomized, controlled trial. *Clin Nutr* 2005; **24**: 481–91.
- 8 Tubelius P, Stan V, Zachrisson A. Increasing work-place healthiness with the probiotic Lactobacillus reuteri: A randomised, double-blind placebo-controlled study. DOI:10.1186/1476-069X-4-25.

- 9 Tejero-Sariñena S, Barlow J, Costabile A, Gibson GR, Rowland I. In vitro evaluation of the antimicrobial activity of a range of probiotics against pathogens: evidence for the effects of organic acids. *Anaerobe* 2012; **18**: 530–8.
- 10 Chapman CMC, Gibson GR, Rowland I. In vitro evaluation of single- and multi-strain probiotics: Inter-species inhibition between probiotic strains, and inhibition of pathogens. *Anaerobe* 2012; **18**: 405–13.
- 11 Permpoonpattana P, Hong HA, Khaneja R, Cutting SM. Evaluation of *Bacillus subtilis* strains as probiotics and their potential as a food ingredient. *Benef Microbes* 2012; **3**: 127–35.

Kerry Beeson:

1. Metz J.A. & Finn, A.F., (2015), Influenza and humidity – Why a bit more damp may be good for you!, *Journal of Infection*, 71(S1):S54-S58
2. Foxman E. et al., (2014), Temperature-dependent Innate Defense against the Common Cold Virus Limits Viral Replication at Warm Temperature in Mouse Airway Cells. *PNAS* 112 (3): 827-832. doi: 10.1073/pnas.1411030112
3. 2017, 'People at High Risk of Developing Flu-Related Complications', *Influenza*, CDC, https://www.cdc.gov/flu/about/disease/high_risk.htm [date accessed: 3/8/17]
4. Robinson J. (MD), (2016), '16 Symptoms of Immune System Problems', *WebMD*, <http://www.webmd.com/cold-and-flu/immune-system-disorders#1>
5. Pham-Huy L.A. et al.,(2008), Free Radicals, Antioxidants in Disease and Health, *Int J Biomed Sci.* 4(2): 89–96.
6. Montalban-Arques A.et al., (2015), Selective Manipulation of the Gut Microbiota Improves Immune Status in Vertebrates, *Frontiers in Immunology*. Oct 9;6:512. doi: 10.3389/fimmu.2015.00512. eCollection.
7. Isolauri E, Salminen S, (2008), 'Probiotics: use in allergic disorders: a Nutrition, Allergy, Mucosal Immunology, and Intestinal Microbiota (NAMI) Research Group Report', *Journal of Clinical Gastroenterology*. 42(S2):S91-6. doi: 10.1097/MCG.0b013e3181639a98.
8. Arunachalam K, et al., (2000), Enhancement of natural immune function by dietary consumption of *Bifidobacterium lactis* (HN019). *Eur J Clin Nutr.* 54: 263-267.

9. Chiang, B. L. et al., (2000), Enhancing immunity by dietary consumption of a probiotic lactic acid bacterium (*Bifidobacterium lactis* HN019): optimization and definition of cellular immune responses. *Eur J Clin Nutr.* 54: 849-855.
10. Turner et al., (2017) 'Effect of probiotic on innate inflammatory response and viral shedding in experimental rhinovirus infection – a randomised controlled trial' *Beneficial Microbes*, 8(2): 207-215.

Jenny Logan:

- (1) Prog Food Nutr. Sci. 1986;10(1-2):1-65. Nutrition, immune response, and outcome. Chandra S, Chandra RK.
- (2) Study proves exercise boosts immune system; BJSM; 2010
- (3) Zinc in Human Health: Effect of Zinc on Immune Cells; Ananda S Prasad; Mol Med. 2008 May-Jun
- (4) Restoration of the thymus in aging mice by in vivo zinc supplementation; Dardenne M et al; Clin Immunol Immunopathol. 1993 Feb
- (5) Blomhoff H Biochemical Soc Trans. Vol 32 pt 6
- (6) Urry Zoe; Resp. Medicine; Volume 3 p85-101
- (7) Hughes DJ et al; Prediagnostic selenium status and hepatobiliary cancer risk in the European Prospective Investigation into Cancer; Am J Clin Nutr. 2016
- (8) Nutr. J; 2014; 13:38
- (9) Talbott S et al; Aggro Food Ind.; Hi Tech; 2010; 21-24
- (10) Talbott S et al; FASEBJ; 2010; 24:922
- (11) Eur J Nutri; 2013; Avinger A, Reide L et al.
- (12) Food Nutr Sci; 2012; 3:738-746
- (13) Vetvicka V; Open Glycoscience; 2010; 3, 1-6
- (14) ONPK; vol 5; vol 32-43; 2009
- (15) Nutrients; 2016 Apr; 8(4):182
- (16) Blackelderberry.info/clinical-summary

Egzona Makolli:

Aranow C (2011). Vitamin D and the Immune System. [J Investig Med.](#) 59(6): 881-886

Urashima M, Segawa T, Okazaki M, Kurihara M, Wada Y, Ida H. Am J Clin Nutr. 2010 May; 91(5):1255-60.

Isolauri E, Majamaa IF, Arvola T, Rantala I, Virtanen E, Arvilommi H. Lactobacillus casei strain GG reverses increased intestinal permeability induced by cow milk in suckling rats. Gastroenterology 1993;105:1643-50.

Perdigón G, de Macías ME, Alvarez S, Oliver G, de Ruiz Holgado AP. Systemic augmentation of the immune response in mice by feeding fermented milks with *Lactobacillus casei* and *Lactobacillus acidophilus*. *Immunology* 1998;63:17-23.

Gleeson M (2007). Immune function in sport and exercise. *Journal of Applied Physiology* Published 1 August 2007 103 (2), 693-699 Foxman EF, Storer JA, Fitzgerald ME, Wasik BR, Hou L, Zhao H et al (2014). Temperature-dependent innate defense against the common cold virus limits viral replication at warm temperature in mouse airway cells. *PNAS*. vol. 112 no. 3, 827-832

Lowen, A.C., S. Mubareka, J. Steel, and P. Palese. 2007. Influenza Virus Transmission Is Dependent on Relative Humidity and Temperature. *PLOS Pathogens*. 3(10):e151.

Cohen S, Tyrrell D and Smith A (2001). Psychological Stress and Susceptibility to the Common Cold. *N Engl J Med* 1991; 325:606-612

Elisabeth Phillips:

- Cherry DK, Hing E, Woodwell DA, Rechtsteiner EA. National Ambulatory Medical Care Survey: 2006 Summary. Hyattsville, MD: National Center for Health Statistics; 2008. Natl Health Stat Report 2008 Aug 6;(3):1-39. PMID: 18972720 View Abstract
- Braman, SS (January 2006). "Chronic cough due to acute bronchitis: ACCP evidence-based clinical practice guidelines." *Chest* 129 (1 Suppl): 95S-103S. PMID: 16428698 View Abstract
- Wenzel, RP; Fowler AA, 3rd (16 November 2006). "Clinical practice. Acute bronchitis." *N Engl J Med*. 2006 Nov 16;355(20):2125-30. PMID: 17108344 View Abstract
- Lebeer S, Vanderleyden J, De Keersmaecker SCJ. Host interactions of probiotic bacterial surface molecules: comparison with commensals and pathogens. *Nature Reviews Microbiology* 2010 Mar 8;(3), 171-84 . PMID: 20157338 View Abstract
- Clancy R. Immunobiotics and the probiotic evolution. *FEMS Immunol Med Microbiol*. 2003 Aug 18;38(1):9-12. PMID: 12900049 View Abstract
- Clancy, R. L. (2012), Towards a vaccine for chronic obstructive pulmonary disease. *Internal Medicine Journal*, 42: 607-13. PMID: 22372964 View Abstract
- Roos K., Hakansson E.G., Holm S. (2001) Effect of recolonization with 'interfering' α streptococci on recurrences of acute and secretory otitis media in children: randomised placebo controlled trial. *Br. Med. J*. 2001 Jan 27;322(7280):1210-2. PMID: 11159619 View Abstract

- Kalliomäki M., Salminen S., Arvilommi H., et al. (2001) Probiotics in primary prevention of atopic disease: a randomized placebo-controlled trial. *Lancet* 2001 Apr 7;357(9262): 1076–9. PMID: 11297958 [View Abstract](#)
- Fujiki T, Hirose Y, Yamamoto Y, Murosaki S. Enhanced immunomodulatory activity and stability in simulated digestive juices of *Lactobacillus plantarum* L-137 by heat treatment. *Biosci Biotechnol Biochem*. 2012;76(5):918-22. PMID: 22738959 [View Abstract](#)
- Murosaki S, Yamamoto Y, Ito K, Inokuchi T, Kusaka H, Ikeda H, Yoshikai Y. Heat-killed *Lactobacillus plantarum* L-137 suppresses naturally fed antigen-specific IgE production by stimulation of IL-12 production in mice. *J Allergy Clin Immunol*. 1998 Jul;102(1):57-64. PMID: 9679848 [View Abstract](#)
- Trinchieri G Interleukin-12: a proinflammatory cytokine with immunoregulatory functions that bridge innate resistance and antigen-specific adaptive immunity. *Annu Rev Immunol*. 1995;13:251-76. PMID: 7612223 [View Abstract](#)
- Murosaki S, Muroyama K, Yamamoto Y, Yoshikai Y. Antitumor effect of heat-killed *Lactobacillus plantarum* L-137 through restoration of impaired interleukin-12 production in tumor-bearing mice. *Cancer Immunol Immunother*. 2000 Jun;49(3):157-64. PMID: 10881695 [View Abstract](#)
- Hirose Y, Murosaki S, Fujiki T, Yamamoto Y, Yoshikai Y, Yamashita M. Lipoteichoic acids on *Lactobacillus plantarum* cell surfaces correlate with induction of interleukin-12p40 production. *Microbiol Immunol*. 2010 Mar;54(3):143-51. PMID: 2023642 [View Abstract](#)
- Hirose Y, Murosaki S, Yamamoto Y, Yoshikai Y, Tsuru T. Daily intake of heat-killed *Lactobacillus plantarum* L-137 augments acquired immunity in healthy adults. *J Nutr*. 2006 Dec;136(12):3069-73. PMID: 17116721 [View Abstract](#)
- Arimori Y, Nakamura R, Hirose Y, Murosaki S, Yamamoto Y, Shidara O, Ichikawa H, Yoshikai Y. Daily intake of heat-killed *Lactobacillus plantarum* L-137 enhances type I interferon production in healthy humans and pigs. *Immunopharmacol Immunotoxicol*. 2012 Dec;34(6):937-43. PMID: 22468623 [View Abstract](#)
- Cohen S, Tyrrell DA & Smith AP (1991) Psychological stress and susceptibility to the common cold. *N Engl J Med*. 1991 Aug 29;325(9): 606–12. PMID: 1713648 [View Abstract](#)
- Cohen S, Frank E, Doyle WJ, et al. (1998) Types of stressors that increase susceptibility to the common cold in healthy adults. *Health Psychol* 1998 May;17(3):214–23. PMID: 9619470 [View Abstract](#)

- Hirose Y, Yamamoto Y, Yoshikai Y, Murosaki S. Oral intake of heat-killed *Lactobacillus plantarum* L-137 decreases the incidence of upper respiratory tract infection in healthy subjects with high levels of psychological stress. *J Nutr Sci*. 2013 Dec 6;2:e39. PMID: 25191589 View Abstract
- Gabryszewski SJ1, Bachar O, Dyer KD, Percopo CM, Killoran KE, Domachowske JB, Rosenberg HF Lactobacillus-mediated priming of the respiratory mucosa protects against lethal pneumovirus infection. *J Immunol*. 2011 Jan 15;186(2):1151-61. doi: 10.4049/jimmunol.1001751. Epub 2010 Dec 17. PMID: 21169550 View Abstract

Romina Melwani:

Gavalda, J. (2014). *12 medicinal mushrooms*. 2nd edn. Santiago de Compostela: Eurograficas. p53

Jones D S, Quinn S (2006). *Textbook of functional medicine*. Gig Harbour: Institute for Functional Medicine. p.464

Cui, XY. (2012). Extract of *Ganoderma lucidum* prolongs sleep time in rats. *K Ethnopharmacol*. 2012 139(3)

Wang J1, Yuan Y2, Yue T2. Immunostimulatory activities of β -d-glucan from *Ganoderma Lucidum*. *Carbohydr Polym*. 2014 Feb 15;102:47-54.

Jan RH et al. (2011) Immuno-modulatory activity of *Ganoderma lucidum*-derived polysaccharide on human monocytoic dendritic cells pulsed with Der p 1 allergen. *BMC Immunol*. 12:31.

Vitamin D feature:

Andrew Thomas

¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3166406/>

¹ <https://www.ncbi.nlm.nih.gov/pubmed/8642450>

¹ <http://bmjopengastro.bmj.com/content/2/1/e000052>

¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2908269/>

¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3743325/>

¹ <https://www.nice.org.uk/news/press-and-media/millions-of-people-at-risk-of-low-vitamin-d-need-better-access-to-supplements-to-protect-health-says-nice>

¹ <https://www.gov.uk/government/statistics/national-diet-and-nutrition-survey-results-from-years-1-to-4-combined-of-the-rolling-programme-for-2008-and-2009-to-2011-and-2012>

¹ <https://www.gov.uk/government/publications/sacn-vitamin-d-and-health-report>

Superfoods feature:

Rose Holmes:

¹ Sircus M (2014) Compendium Surviving Cancer—Natural Allopathic Medicine. Lulu Press

² Nishiyama T, Hagiwara Y, Hagiwara H, Shibamoto T (1994) Inhibitory effect of 2''-O-Glycosyl isovitexin and alpha tocopherol on genotoxic glyoxal formation in a lipid peroxidation system. *Fd Chem Toxic.* 32:1047-1051

³ Kang J, Xie C, Li Z, Nagarajan S, Shauss AG, Wu T, Wu X (2011) Flavonoids from acai (*Euterpe oleracea* Mart) pulp and their antioxidant and anti-inflammatory activities. *Food Chemistry* 128: 152-157.

⁴ Jensen GS, Ager DM, Redman KA, Mitzner MA, Benson KF, Shauss AG (2011) Pain reduction and improvement in range of motion after daily consumption of an açai (*Euterpe oleracea* Mart.) pulp-fortified polyphenolic-rich fruit and berry juice blend. *J Med Food* 14:702-711.

⁵ Pala D, Barbosa PO, Silva CT, deSouza MO, Freitas FR, Volp AC, Maranhão RC, Freitas RN (2017) Açai (*Euterpe oleracea* Mart.) dietary intake affects plasma lipids, apolipoproteins, cholesteryl ester transfer to high-density lipoprotein and redox metabolism: a prospective study in women. *Clin Nutr* S0261-5614(17)30051-1.

Research news:

[1] Baker H, DeAngelis B, Holland B, Gittens-Williams L, Barrett T Jr. Vitamin Profile of 563 Gravidas during Trimesters of Pregnancy. *Journal of the American College of Nutrition* 2002;21(1):33-7.