# Food for Thought

Nutrition and the Aging Brain

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# Introduction

Perhaps because aging and I are becoming inseparable companions, I am increasingly interested in anything that might slow or even prevent the cognitive decline that often accompanies the aging brain. In a previous book, I analyzed how activities such as systematic exercise, cognitive stimulation, and even affectionate and social activities could lead to cognitive sharpening and psychological resilience. I realized subsequently that the impact of nutrition on delaying cognitive decline was at least as important as those activities. Hence this book.

With cognitive decline in mind, consider that while much of modern nutrition research assesses impacts on lifespan, the newer term "healthspan" describes our years of living with good health. Nutritionists interested in healthspan usually emphasize cardiovascular health, diabetes, cancer, obesity, or similar indicators of physical health. Lifespan and healthspan are not always correlated; indeed, some nutritive interventions that extend the one can limit the other (e.g., Wilson et al., 2021). But the focus of this book is on nutrition's impacts on the aging brain, on our possibly-declining cognitive abilities, and on our changing emotional dispositions. Perhaps we need a different term for that—one that more accurately describes mental preservation. Just free-associating, perhaps "cogspan" or even "smartspan" could indicate our later years of lucidity. Unfortunately and obviously, neither of those terms has any real pizzazz, so I withdraw them from official consideration. But pizzazz or not, I am fond of "smartspan" and I hope mine is long and steady.

Of course, my concerns with aging and cognition are not unique. As we approach our "best by" date, most of us hope that our life pattern reflects healthy elderly years with all our mental faculties intact, at least until we are overtaken by our genetic limitations. The pattern of a healthy and lucid elderly life followed by death that arrives without dragging her feet is the "squaring of the curve." Thus the "squaring" is not a gradual decline, but rather a late-but-quick one.

Assessing impacts on brain health from nutrition leads to unique recommendations because nutrition that does not extend life or save us from cardiovascular disasters should not necessarily be dismissed; it may add to the curve squaring of mental health and cognitive capacities. Consider, for example, recent observations that multi-vitamin supplements have not been proven to extend life and may therefore be "a waste of money." However, as noted extensively below, vitamin supplements may still contribute to brain health, cognitive preservation, and other aspects of mental health, especially for those

of us with some nutritive deficiencies. And as for "wasting money," even multivitamin formulations for older people like me cost only US $.10; they are affordable. Actually, the stand taken by many nutritionists against supplements is justified by their recognition that many essential nutrients can only be obtained from food—not from supplements, and they recognize that many of us substitute supplements to allay concerns about poor dietary choices.

Another reason for emphasizing brain health and preserving cognition is that some nutrients may have different impacts on brain health than they do on other aspects of physical health. For example, there is some evidence that moderate doses of alcohol enhance cardiovascular health, but those same moderate levels have sometimes been found to be harmful for brain and/or cognition, or sometimes beneficial (yes!) depending on the important factors discussed in Chapter 14.

Other nutrients like tryptophan that have positive effects on neurochemical balances and thus moods and energy may have no known positive impacts on longevity (Canfield & Bradshaw, 2019).

**Consistency.** The history of research on nutrition seems filled with inconsistent findings—sometimes outright contradictions. Those of us lucky enough to have progressed to "old" or even all the way to "elderly" have experienced the whip-lash of research informing us that previously good nutrients were actually bad for us, and vice versa. To mention just a few examples, assessments of eggs have gone from bad to good—especially good for brains, whereas some margarine, that used to save us from "awful" butter, has progressed largely from good to bad; transfats that used to be added to everything delicious are now considered almost deadly, and sugar-filled drinks keep getting worse and worse. Some of the artificial sweeteners that otherwise could "save" us from the sugar have proven to be awful for us. Whole milk may not be so bad after all, and some cheeses are absolutely great for us (perhaps only slightly exaggerated for personal reasons). Long-term coffee consumption has emerged from probably bad to quite good, and thankfully even chocolate turns out to be increasingly wonderful.

Keep in mind that inconsistencies in nutrition research are not unique. Rather than dismissing nutrition research because of its occasional inconsistencies, we should examine the research with caution and the reservations discussed in Chapter 3, and even then perhaps view at least some of the inconsistencies as signs of scientific progress.

**Smart supplements.** An overarching issue of inconsistent nutrition research is whether *any* diet or supplement has substantial benefits for preserving brain and cognition, and for delaying dementia. It was only in 2015 that the lead journal of the Association for Psychological Science called nutritional

mental health an "emerging" field (Kaplan et al., 2015, p. 964). Yet even well before 2015, research on major dietary approaches such as the Mediterranean diet showed that smart nutrition choices do indeed support brain maintenance and development, enhance cognition, buttress our better moods, and even delay dementia.

But what about specific nutrients, and supplements? In the editor's introduction to a special section on nutrition and mental health in the journal *Clinical Psychological Science,* Kazdin (2016, p. 1080) noted that there are "controlled clinical trials showing that psychiatric symptoms and disorders respond to micronutrient interventions." However, summaries of the larger body of research on specific nutrients and supplements are mixed. Those inconsistencies often bother people who try to be conscientious about their nutrition, and the sometimes-bogus information from some purveyors of supplements does not help.

According to the US Government Accountability Office report from 2017, many advertisements that describe the benefits of various supplements are simply untrue, and some are even illegal. Specifically focusing on cognition, a *Consumer Reports* article recently asked "Do memory supplements really work?" and answered with quotations from authorities that "dietary supplements cannot cure, mitigate, treat, or prevent Alzheimer's dementia, or any disease" (Calderone, 2018, p. 2).

A major purpose of this book is to address that issue, mostly by examining research published in the last decade or so. But before we go there, reconsider the phrase that "dietary supplements cannot cure, mitigate, treat, or prevent Alzheimer's dementia, or any disease." I shall show that modern research justifies denying that phrase. As written, it is simply wrong. But beyond questioning its accuracy as written, note also that "*or delay*" was *not* included. Perhaps we should not reject a supplement that has solid research support for *delaying* cognitive decline or *delaying* dementias such as Alzheimer's, or one that delays or *mitigates* depression. After all, a delay could extend a decade or two. Nor should we write off the potential for major benefits to brain, cognition, or mental health from some supplements merely because of occasional bogus and fraudulent claims.

We should remain especially aware of the potential needs for "essential nutrients." Essential nutrients are nutrients that we require from our food because we humans cannot synthesize them in our bodies in sufficient quantities. There seem to be 40 to 50 of them—around 15 each of vitamins and minerals, some amino acids, and a few essential fatty acids. In ideal conditions, we would be able to derive those nutrients from the foods we consume, but that may not always be the case. Supplements may be required, or at least very beneficial, and those supplements may be important for

maintaining balances of nutrients that are not technically essential. For example, with exposure to sufficient sunlight, our bodies can usually synthesize enough vitamin D, but when winter arrives in Northern lands, we benefit from an occasional salmon, or, failing that, even from a drugstore supplement. Naturally, our concern with important nutrients goes beyond those that are technically called essential.

**Expertise.** It would be appropriate for readers to question my authority for saying such things. The answer, like nutrition itself, is complicated. Because I am not a nutritionist I recognize that my occasionally questioning real nutritionists must seem a bit audacious. My interests as a psychologist are in how neurochemistry and various neural and brain processes affect our cognitive capacities and our resilience. As mentioned above, my previous book, titled *"Building resistance to stress and aging: The toughness model"* was about how activities such as physical exercise, some social activities, cognitive challenges, etc. enhance neurochemistry and neural structures (i.e., toughen us), and then how those physiological modifications lead to enhanced cognition and to psychological resilience. But for those activities to enhance neurochemistry and neural structures the right nutritive elements must be available in sufficient amounts. And they do make a difference.

To continue being audacious, I believe that a case can be made for a book such as this being produced by a non-nutritionist. Without pre-conceived notions about the effectiveness of any of the nutrients or supplements described within, I have dived into the modern research; and the reference section of well over 300 research papers is heavy with reviews, sometimes with meta-analyses—reviews and analyses mostly by real nutritionists to whom I owe a great debt.

**What lies ahead.** First, note that this is not designed to be a "self help" book. Rather it is a book about nutrition science, and neuroscience, cognitive science, and to a lesser extent about the science of stress tolerance, depression, and anxiety. Although I make some dietary recommendations that leak into some of the chapters and are summarized in Chapter 20, my primary goal is to provide the scientific information to allow readers to make their own nutrition choices.

In fact, if you need more information to feel confident about your choices, doing further scholarship on your own is really not that difficult. Simply access "Google Scholar" and then enter your own keywords such as "lutein cognition review" and limit the search to (say) papers published after 2010. The article abstracts you obtain from such searches may be readable and all that you really need. However, if you need the entire paper, clicking an icon for "PDF" or something similar may quickly download your paper. If you have

access to an academic library, the Interlibrary Loan office can get the paper for you. If worst comes to it, you can almost always pay for a copy.

The structure of the book is that the first three chapters provide a foundation for understanding impacts on brain, cognition, and resilience. Chapter 1 very lightly sketches relevant brain structure and neurochemistry. Chapter 2 discusses in only slightly more detail how aging and stress affect neurochemistry, brain structure, cognitive capacities, and resilience. Chapter 3 introduces basic nutrition research issues—the good, the bad, and the ugly. The brain scientists among you may wish to skim or even skip the first two or even three of those chapters. Chapters 4 through 17 consolidate the credible modern research on impacts of nutrition on brain and cognitive capacities. Chapter 18 describes nutrition that affects psychological resilience, interpreted there as stress tolerance, and resistance to both anxiety and depression.

Chapter 19 describes how activities that toughen us can interact with nutrition that has similar effects. Although toughening activities include the wide array listed above, Chapter 19 will be limited to the interplay of nutrition with physical exercise and cognitive challenge. After all, I must stop somewhere. Chapter 20 offers afterthoughts and briefly summarizes the highlights of nutrition impacts on brain and cognition.

The Glossary is meant to be an informative and substantial part of the book, designed to relieve any pain I may have inflicted with scanty explanations in the text. Please use it.

**Thanks and acknowledgements.** My wife Karen has been most patient. Being cooped up together during the pandemic has led to interesting interactions. Often she has come upon me talking to my computer screen, obviously confused, but trying desperately to figure it all out. At such times I have not been the great communicator she may have wished. My thanks for putting up with all of it.

Most sincerely, I thank the thousand or so scholars who prepared the research papers and reviews that I have devoured to obtain a reasonable level of understanding of this most interesting topic.

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# References


Alam, A. B., Lutsey, P. L., Gottesman, R. F., Tin, A., & Alonso, A. (2020). Low serum magnesium is associated with incident dementia in the ARIC-NCS Cohort. *Nutrients*, *12*(10), 70-79. https://doi.org/10.3390/nu12103074

Al-Amin, M., Bradford, D. K., Sullivan, R. K. P., Kurniawan, N. D., Moon, Y., Han, S-H., Zalesky, A., & Burne, T. H. J. (2019). Vitamin D deficiency is associated with reduced hippocampal volume and disrupted structural connectivity in patients with mild cognitive impairment. *Human Brain Mapping, 40*(2), 394-406. https://doi.org/10.1002/hbm.24380

Alavi, N. M., Khademalhoseini, S., Vakili, Z., & Assarian, F. (2019). Effect of vitamin D supplementation on depression in elderly patients: A randomized clinical trial. *Clinical Nutrition*, *38*(5), 2065-2070. http://eprints.kaums.ac.ir/4022/1/1-s2.0-S026156141832449X-main.pdf

Ali, Y. O., Bradley, G., & Lu, H-C. (2017). Screening with an NMNAT2-MSD platform identifies small molecules that modulate NMNAT2 levels in cortical neurons. *Scientific Reports, 7,* 43846. https://doi.org/10.1038/srep43846

Alisi, L., Cao, R., DeAngelis, C., Cafolla, A., Caramia, F., Cartocci, G., Librando, A., & Fiorelli, M. (2019). The relationships between vitamin K and cognition: A review of current evidence. *Frontiers of Neurology, 10,* 239. https://doi.org/10.3389/fneur.2019.00239

Amen, D. J., Harris, W. S., Kidd, P. M., Meysami, S., & Raji, C. A. (2017). Quantitative erythrocyte Omega-3 EPA plus DHA levels are related to higher regional cerebral blood flow on brain SPECT. *Journal of Alzheimer's Disease*, *58*(4), 1189-1199. https://doi.org/10.3233/JAD-17028

Anderson, R. A., Qin, B., Canini, F., Poulet, L., & Roussel, A. M. (2013). Cinnamon counteracts the negative effects of a high fat/high fructose diet on behavior, brain insulin signaling and Alzheimer-associated changes. *PLoS One, 8*(12), e83243. https://doi.org/10.1371/journal.pone.0083243

Andreux, P. A., Blanco-Bose, W., Ryu, D., Burdet, F., Ibberson, M., Aebischer, P., Auwerx, J., Singh, A., & Rinsch, C. (2019). The mitophagy activator urolithin A is safe and induces a molecular signature of improved mitochondrial and cellular health in humans. *Nature Metabolism, 1*(6), 595-603. https://doi.org/10.1038/s42255-019-0073-4

Anjum, I., Jaffery, S. S., Fayyaz, M., Samoo, Z., & Anjum, S. (2018). The role of vitamin D in brain health: A mini literature review. *Cureus, 10*(7), e2960. https://doi.org/10.7759/cureur.2960

Appleton, K. M., Sallis, H. M., Perry, R., Ness, A. R., & Churchill, R. (2015). Omega-3 fatty acids for depression in adults. *Cochrane Database Systematic Reviews, 2015*(11), *Article* CD004692. https://doi.org/10.1002/14651858.CD004692.pub4

Appleton, K. M, Voyias, P. D, Sallis, H. M., Dawson, S., Ness, A. R., Churchill, R., & Perry, R. (2021). Omega-3 fatty acids for depression in adults. *Cochrane Database of Systematic Reviews, 2021*(11).

Avallone, R., Vitale G., & Bartolotti, M. (2019). Omega-3 fatty acids and neurodegenerative diseases: New evidence in clinical trials. *International Journal of Molecular Science, 20*, 4256. https://doi.org/10.3390/ijms20174256

Avgerinos, K. I., Vrysis, C., Chaitidis, N., Kolotsiou, K., Myserlis, P. G., & Kapogiannis, D. (2020). Effects of saffron (*Crocus sativus* L.) on cognitive function. A systematic review of RCTs. *Neurological Sciences, 41*(10), 2747–2754. https://doi.org/10.1007/s10072-020-04427-0

Ayati, Z., Yang, G., Ayati, M. H., Emami, S. A., & Chang, D. (2020). Saffron for mild cognitive impairment and dementia: A systematic review and meta-analysis of randomised clinical trials. *BMC Complementary Medicine and Therapies*, *20*(1), 333. https://doi.org/10.1186/s12906-020-03102-3

Bae, J. H., & Kim, G. (2018). Systematic review and meta-analysis of omega-3-fatty acids in elderly patients with depression. *Nutrition Research. 50,* 1-9. https://doi.org/10.1016/j.nutres.2017.10.013.

Ballarini, T., Van Lent, D. M., Brunner, J., Schröder, A., Wolfsgruber, S., Altenstein, S., Brosseron, F., Buerger, K., Dechent, P., Dobisch, L., Duzel, E., Ertl-Wagner, B., Fliessbach, K., Freiesleben, S. D., Frommann, I., Glanz, W., Hauser, D., Haynes, J. D., Heneka, M. T., … Delcode Study Group. (2021). Mediterranean diet, Alzheimer disease biomarkers and brain atrophy in old age**.** *Neurology*, *96*(24), e2920–e2932. Advance online publication. https://doi.org/10.1212/WNL.0000000000012067

Basak, C., Boot, W. R., Voss, M. W., & Kramer, A. F. (2008). Can training in a real-time strategy videogame attenuate cognitive decline in older adults? *Psychology and Aging, 23*(4), 767–777. https://doi.org/10.1037/a0013494

Basambombo, L. L., Carmichael, P-H., Côté, S., & Laurin, D. (2017). Use of vitamin E and C supplements for the prevention of cognitive decline. *Annals of Pharmacotherapy, 51*(2), 118-124. https://doi.org/10.1177/1060028016673072

Baynham, R., van Zanten, J. J. C. S. V., Johns, P. W., Pham, Q. S., & Rendeiro, C. (2021). Cocoa flavanols improve vascular responses to acute mental stress in young healthy adults**.** *Nutrients*, *13*(4), 1103. https://doi.org/10.3390/nu13041103

Berman, M. E., McCloskey, M. S., Fanning, J. R., Schumacher, J. A., & Coccaro, E. F. (2009). Serotonin augmentation reduces response to attack in aggressive individuals. *Psychological Science, 20*(6), 714-720. https://doi.org/10.1111/j.1467-9280.2009.02355.x

Beydoun, M. A., Gamaldo, A. A., Beydoun, H. A., Tanaka, T., Tucker, K. A., Talegawkar, S. A., Ferrucci, L., & Zonderman, A. B. (2014). Caffeine and alcohol intakes and overall nutrient adequacy are associated with longitudinal cognitive performance among U.S. adults. *The Journal of Nutrition: Nutritional Epidemiology*, *144*(6), 890-901. https://doi.org/10.3945/jn.113.189027

Bhattacharyya, R., Black, S. E., Lotlikar, M. S., Fenn, R. H., Jorfi, M., Kovacs, D. M., & Tanzil, R. E. (2021). Axonal generation of amyloid-β from palmitoylated APP in mitochondria-associated endoplasmic reticulum membranes. *Cell Reports, 35*(7), 109134. https://doi.org/10.1016/j.celrep.2021.109134

Blake-Mortimer, J., Winefield, A. H., & Chalmers, A. H. (1998). Evidence for free radical-mediated reduction of lymphocytic 5'-ectonucleotidase during stress. *International Journal of Stress Management, 5*(1), 57-75.

Block, G., Jensen, C. D., Dalvi, T. B., Norkus, E. P., Hudes, M., Crawford, P. B., Holland, N., Fung, E. B., Schumacher, L., & Harmatz, P. (2008). Vitamin C treatment reduces elevated C-reactive protein. *Free Radical Biology and Medicine, 46*(1) 70-77.

Boehme, M., Guzzetta, K. E., Bastiaanssen, T. F. S., van de Wouw, M., Moloney, G. M., Gual-Grau, A. Spichak, S., Olavarría-Ramírez, L., Fitzgerald, P., Morillas, E., Ritz, N. L., Jaggar, M., Cowan, C. S. M., Crispie, F., Donoso, F., Halitzki, E., Neto, M. C., Sichetti, Golubeva, A. V. … Cryan, J. F. (2021). Microbiota from young mice counteracts selective age-associated behavioral deficits. *Nature Aging, 1*(8), 660-676. https://doi.org/10.1038/s43587-021-00093-9

Borota, D., Murray, E., Keceli, G., Chang, A., Watabe, J. M., Ly, M., Tosscno, J. P., & Yassa, M. A. (2014). Post-study caffeine administration enhances memory consolidation in humans. *Nature Neuroscience, 17*(2), 201–203. https://doi.org/10.1038/nn.3623

Bowman, G. L., Silbert, L. C., Howieson, D., Dodge, H. H., Traber, M. G., Frei, B., Kaye, J. A., Shannon, J., & Quinn, J. F. (2012). Nutrient biomarker patterns, cognitive function, and MRI measures of brain aging. *Neurology, 78*(4), 241-249. https://doi.org/10.1212/WNL.0b013e3182436598

Braakhuis, A. J., Nagulan, R., & Somerville, V. (2018). The effect of MitoQ on aging-related biomarkers: A systematic review and meta-analysis. *Oxidative Medicine and Cellular Longevity, 2018*, 8575263. https://doi.org/10.1155/2018/8575263

Braidy, N., & Liu, Y. (2020). NAD+ therapy in age-related degenerative disorders: A benefit/risk analysis. *Experimental Gerontology, 132*, 110831. https://doi.org/10.1016/j.exger.2020.110831

Brainard, J. S., Jimoh, O. F., Deane, K. H. O., Biswas, P., Donaldson, D., Maas, K., Abdelhamid, A. S, Hooper, L. & PUFAH group. (2020). Omega-3, omega-6, and polyunsaturated fat for cognition: Systematic review and meta-analysis of randomized trials. *Journal of the American Medical Directors Association, 2020*(10), 1439-1450.e21. https://doi.org/10.1016/j.jamda.2020.02.022. Epub 2020 Apr 15. PMID: 32305302

Bravo, J. A., Forsythe, P., Chew, M. V., Escaravage, E., Savignac, H. M., Dinan, T. G., Bienenstock, J. & Cryan, J. F. (2011). Ingestion of *Lactobacillus* strain regulates emotional behavior and central GABA receptor expression in a mouse via the vagus nerve. *Proceedings of the National Academy of Sciences of the United States of America, 108*(38), 16050-16055. https://doi.org/10.1073/pnas.1102999108

Bredesen, D. E., Amos, E. C., Canick, J., Ackerley, M., Raji, C., Fiala, M., & Ahdidan, J. (2016). Reversal of cognitive decline in Alzheimer's disease. *Aging, 8*(6), 1250–1258. https://doi.org/10.18632/aging.100981

Brown, B. S., Payne, T., Kim, C., Moore, G., Krebs, P., & Martin, W. (1979). Chronic response of rat brain norepinephrine and serotonin levels to endurance training. *Journal of Applied Physiology, 46*(1), 19–23. https://doi.org/10.1152/jappl.1979.46.1.19

Buettner, D. (2008). *The blue zones: Lessons for living longer from the people who've lived the longest*. National Geographic Society.

Buffington, S. A., Dooling, S. W., Sgritta, M., Noecker, C., Murillo, O. D., Felice, D. F., Turnbaugh, P. J., & Costa-Mattioli, M. (2021). Dissecting the contribution of host genetics and the microbiome in complex behaviors. *Cell, 184*(7), 1740-1756. https://doi.org/10.1016/j.cell.2021.02009

Burdette, J. H., Laurienti, P. J., Espeland M. A., Morgan, A., Telesford, Q., Vechlekar, C. D., Hayasaka, S., Jennings, J. M., Katula, J. A., Kraft, R. A., & Rejeski, J. (2010). Using network science to evaluate exercise-associated brain changes in older adults. *Frontiers in Aging Neuroscience, 2*, 23, https://doi.org/10.3389/fnagi.2010.0023

Burton, C., Campbell, P., Jordan, K., Strauss, V., & Mallen, C. (2013). The association of anxiety and depression with future dementia diagnosis: A case-control study in primary care. *Family Practice, 30*(1), 25-30.

Calabrese, C., Gregory, W. L., Leo, M., Kraemer, D., Bone, K., & Oken, B. (2008). Effects of a standardized *Bacopa monnieri* extract on cognitive performance, anxiety, and depression in the elderly: a randomized, double-blind, placebo-controlled trial. *Journal of Alternative and Complementary Medicine, 14*(6), 707–713. https://doi.org/10.1089/acm.2008.0018

Calderone, J. (2018, February 5). Do memory supplements really work? *Consumer Reports*. https://www.consumerreports.org/dietary-supplements/do-memory-supplements-really-work-a1023445146/

Campbell, N. L., Boustani, M. A., Lane, K. L., Gao, S., Hendrie, H., Khan, B. C., Murrell, J. R., Unverzagt, F. W., Hake, A., Smith-Gamble, V., & Hall, K. (2010). Use of anticholinergics and the risk of cognitive impairment in an African American population. *Neurology, 75*(2), 152-159. https://doi.org/10.1212/WNL.0b013e3181e7f2ab

Canfield, C.-A., & Bradshaw, P. C. (2019). Amino acids in the regulation of aging and age-related diseases. *Translational Medicine of Aging, 3*, 70-89. https://doi.org/10.1016/j.tma.2019.09.001

Cawthon, R. M., Meeks, H. D, Sasani, T. A., Smith, K. R., Kerber, R. A., O'Brien, E., Baird, L., Dixon, M. M., Peiffer, A. P., Leppert, M. F., Quinlan, A. R., & Jorde, L. B. (2020). Germline mutation rates in young adults predict longevity and reproductive lifespan**.** *Scientific Reports, 10*(1), 10001. https://doi.org/10.1038/s41598-020-66867-0

Champagne, F. A. (2010). Early adversity and developmental outcomes: Interaction between genetics, epigenetics, and social experiences across the life span. *Perspectives on Psychological Science, 5*(5), 564-574. https://doi.org/10.1177/1745691610383494

Chapman, T. R., Barrientos, R. M., Ahrendsen, J. T., Maier, S. F., & Patterson, S. L. (2010). Synaptic correlates of increased cognitive vulnerability with aging: Peripheral immune challenge and aging interact to disrupt theta-burst late-phase long-term potentiation in hippocampal area CA1. *Journal of Neuroscience, 30*(22), 7598-7603. https://doi.org/10.1523/JNEUROSCI.5172-09.2010

Chaudhari, K. S., Tiwari, N. R., Tiwari, R. R., & Sharma, R. S. (2017). Neurocognitive effect of nootropic drug *Brahmi* (*Bacopa monnieri*) in

Alzheimer's disease. *Annals of Neurosciences, 24*(2), 111-122. https://doi.org/10.1159/000475900

Chevalier, G., Siopi, E., Guenin-Macé, L., Pascal, M., Laval, T., Rifflet, A., Boneca, I. G., Demangel, C., Colsch, B., Pruvost, A., Chu-Van, E., Messager, A., Leulier, F., Lepousez, G., Eberl, G., & Lledo, P-M. (2020). Effect of gut microbiota on depressive-like behaviors in mice is mediated by the endocannabinoid system**.** *Nature Communications, 11*(1), 6363. https://doi.org/10.1038/s41467-020-19931-2

Chida, Y., & Hamer, M. (2008). Chronic psychosocial factors and acute physiological responses to laboratory-induced stress in healthy populations: A quantitative review of 30 years of investigations. *Psychological Bulletin, 134*(6), 829-885. https://doi.org/10.1037/a0013342

Cicero, A. F. G., Fogacci, F., & Banach, M. (2018). Botanicals and phytochemicals active on cognitive decline: The clinical evidence. *Pharmacological Research, 130,* 204-212. https://doi.org/10.1016/j.phrs.2017.12.029

Colcombe, S. J., Ericksen, K. I., Scalf, P. E., Kim, J. S., Prakash, R., McAuley, E., Elavsky, S., Marquez, D. X., Hu, L., & Kramer, A. F. (2006). Aerobic exercise training increases brain volume in aging humans. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 61*(11), 1166–1170. https://doi.org/10.1093/gerona/61.11.1166

Colcombe, S. J., & Kramer, A. F. (2003). Fitness effects on the cognitive function of older adults: A meta-analytic study. *Psychological Science, 14*(2), 125–130. https://doi.org/10.1111/1467-9280.t01-1-01430

Colcombe, S. J., Kramer, A. F., Ericksen, K. I., Scalf, P., McAuley, E., Cohen, N. J., Webb, A., Jerome, G. J., Marquez, D. X, & Elavsky, S. (2004). Cardiovascular fitness, cortical plasticity, and aging. *Proceedings of the National Academy of Sciences of the United States of America, 101*(9), 3316–3332. https//:doi.org/10.1073/pans0400266101

Colucci, L., Bosco, M., Rosario Ziello, A., Rea, R., Amenta, F., & Fasanaro, A. M. (2012). Effectiveness of nootropic drugs with cholinergic activity in treatment of cognitive deficit: a review. *Journal of Experimental Pharmacology, 4*, 163–172. https://doi.org/10.2147/JEP.S35326

Cotman, C. W., Berchtold, N. C., & Christie, L. A. (2007). Exercise builds brain health: Key roles of growth factor cascades and inflammation. *Trends in Neurosciences, 30*(9), 464–472. https://doi.org/10.1016/j.tins.2007.06.011

Coupland, C. A. C., Hill, T., Dening, T., Morriss, R., Moore, M., & Hippisley-Cox, J. (2019). Anticholinergic drug exposure and the risk of dementia: A nested case-control study. *Journal of the American Medical Association: Internal Medicine, 179*(8), 1084-1093. https://doi.org/10.1001/jamainternmed.2019.0677

Craik, F. I. M., Bialystok, E., & Freeman, M. (2010). Delaying the onset of Alzheimer disease: Bilingualism is a form of cognitive reserve. *Neurology, 75*(19), 1726–1729. https://doi.org/10.1212/WNL.0b013e3181fc2a1c

Crane, P. K., Walker, R., Hubbard, R. A., Li, G., Nathan, D. M., Zheng, H., Heneuse, S., Craft, S., Montine, T. J., Kahn, S. E., McCormick, W., McCurry, S. M., Bowen, J. D., & Larson, E. B. (2013). Glucose levels and risk of dementia. *New England Journal of Medicine, 369*(6), 540–548. https://doi.org/10.1056/NEJMoa1215740

Cunnane, S. C., Courchesne-Loyer, A., St-Pierre, V., Vandenberghe, C., Pierotti, T., Fortier, M., Croteau, E., & Castellano, C. A. (2016). Can ketones compensate for deteriorating brain glucose uptake during aging? Implications for the risk and treatment of Alzheimer's disease. *Annals of the New York Academy of Science, 1367*(1), 12–20. https://doi.org/10.1111/nyas.12999

D'Amelio, P., & Quacquarelli, L. (2020). Hypovitaminosis D and aging: Is there a role in muscle and brain health? *Nutrients, 12*(3), 628. https://doi.org/10.3390/nu12030628

Danker, J. F., & Anderson, J. R. (2010). The ghosts of brain states past: Remembering reactivates the brain regions engaged during encoding. *Psychological Bulletin, 136*(1), 87–102. https://doi.org/10.1037/a0017937

Daviet, R., Aydogan, G., Jagannathan, K., Spilka, N., Koellinger, P. D., Kranzler, H. R., Nave, G., & Wetherill, R. R. (2022). Associations between alcohol consumption and gray and white matter volumes in the UK Biobank. *Nature communications*, *13*(1), 1175. https://doi.org/10.1038/s41467-022-28735-5

Dcruz, M. M., Mamidipalli, S. S., Thakurdesai, A., & Andrade, C. (2018). Curcumin for neuroprotection: Taking a second look at results. *American Journal of Geriatric Psychiatry, 26*(6), 715. https://doi.org/10.1016/j.jagp.2018.03.015

de Cabo, R., & Mattson, M. P. (2020). Effects of intermittent fasting on health, aging, and disease. *New England Journal of Medicine, 381*(26), 2541–2551. https://doi.org/10.1056/NEJMra1905136

de Jager, C. A., Oulhaj, A., Jacoby, R., Refsum, H., & Smith, A. D. (2012). Cognitive and clinical outcomes of homocysteine-lowering B-vitamin treatment in mild cognitive impairment: a randomized controlled trial, *International Journal of Geriatric Psychiatry, 27*(6), 592-600. https://doi.org/10.1002/gps.2758

de J.R. De-Paula, V., Forlenza, A. S., & Forlenza, O. V. (2018). Relevance of gutmicrobiota in cognition, behaviour and Alzheimer's disease. *Pharmacological Research, 136*, 29-34. https://doi.org/10.1016/j.phrs.2018.07.007

de Lucia, C., Murphy, T., Steves, C. J., Dobson, R. J. B., Proitsi, P., & Thuret, S. (2020). Lifestyle mediates the role of nutrient-sensing pathways in cognitive aging: cellular and epidemiological evidence. *Communications Biology, 3*(1), 157. https://doi.org/10.1038/s42003-020-0844-1

Deng, J., Zhou, D. H. D., Li, J., Wang, Y. J., Gao, C., & Chen, M. (2006). A 2-year follow-up study of alcohol consumption and risk of dementia. *Clinical Neurology and Neurosurgery 108*(4), 378–383. https://doi.org/10.1016/j.clineuro.2005.06.005

Derbyshire, E. (2019). Could we be overlooking a potential choline crisis in the United Kingdom. *British Medical Journal: Nutrition, Prevention & Health, 2*(2), 86-89. https://doi.org/10.1136bnjnph-2019-000037

Dhana, K., James, B. D., Agarwal, P., Aggarwal, N. T., Cherian, L. J., Leurgans, S. E., Barnes, L. L., Bennett, D. A., & Schneider, J. A. (2021). MIND Diet, common brain pathologies, and cognition in community-dwelling older adults. *Journal of Alzheimer's Disease, 83*(2): 683. https://doi.org/10.3233/JAD-210107

Dhir, A. (2018). Red wine retards abeta deposition and neuroinflammation in Alzheimer's disease. In Farooqui, T., & Farooqui, A. (Eds.) *Role of the*

*Mediterranean diet in the brain and neurodegenerative diseases,* (pp. 285-299). Academic Press.

Di Castelnuovo, A., Costanzo, S., Bonaccio, M., Rago, L., De Curtis, A., Persichillo, M., Bracone, F., Olivieri, M., Cerletti, C., Donati, M. B., de Gaetano, G., Iacoviello, L., & Moli-sani Investigators (2017). Moderate alcohol consumption is associated with lower risk for heart failure but not atrial fibrillation. *Journals of the American College of Cardiology. Heart Failure. 5*(11), 837–844. https://doi.org/10.1016/j.jchf.2017.08.017

Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research, *Psychological Bulletin, 130*(3), 355–391. https://doi.org/10.1037/0033-2909.130.3.355

Dienstbier, R. A., & PytlikZillig, L. M. (2021). Building emotional stability and mental capacity: The toughness model. In Snyder, C. R, Lopez, S. J., Edwards, L. M., & Marques, S. C. (Eds.) *Oxford handbook of positive psychology* (3rd ed., pp. 687-702). Oxford University Press.

Dienstbier, R. A. (2015). *Building resistance to stress and aging: The toughness model.* Palgrave Macmillan.

Douaud, G., Refsum, H., de Jager, C. A., Jacoby, R., Nichols, T. E., Smith, S. M., & Smith, A. D. (2013). Preventing Alzheimer's disease-related gray matter atrophy by B-vitamin treatment. *Proceedings of the National Academy of Sciences of the United States of America, 110*(23), 9523-9528. https://doi:10.1073/ pnas.1301816110

Draganski, B., Gaser, C., Kempermann, G., Kuhn, H. G., Winkler, G., Buchel, C., & Arne, M. (2006). Temporal and spatial dynamics of brain structural changes during extensive learning. *The Journal of Neuroscience, 26*(23), 6314–6317. https://doi.org/10.1523/JNEUROSCI.4628-05.2006

Driscoll, I., Shumaker, S. A., Snively, B. M., Margolis, K. L., Manson, J. E., Vitolins, M. Z., Rossom, R. C., & Espeland, M. A. (2016). Relationships between caffeine intake and risk for probable dementia or global cognitive impairment: The Women's Health Initiative Memory Study. *The Journals of Gerontology: Series A, 71*(12), 1596-1602. https://doi.org/10.1093/gerona/ glw078

Droste, S. K., Chandramohan, Y., Hill, L. E., Linthorst, A. C. E., & Reul, J. M. (2007). Voluntary exercise impacts on the rat hypothalamic-pituitary-adrenocortical axis mainly at the adrenal level. *Neuroendocrinology, 86*(1), 26–37. https://doi.org/10.1159/000104770, 26–37.

Du, L., Zhao, Z., Cui, A., Zhu, Y., Zhang, L., Liu, J., Shi, S., Fu, C., Han, X., Gao, W., Song, T., Xie, L., Wang, L., Sun, S., Guo, R., & Ma, G. (2018). Increased iron deposition on brain quantitative susceptibility mapping correlates with decreased cognitive function in Alzheimer's disease. *ACS Chemical Neuroscience, 9*(7), 1849–1857. https://doi.org/10.1021/acschemneuro.8b00194

Epel, E. S. (2009). Telomeres in a life-span perspective: A new "psychobiomarker"? *Current Directions in Psychological Science, 18*(1), 6-10. https://doi.org/10.1111/j.1467-8721.2009.01596.x

Erickson, K. I., Banducci, S. E., Weinstein, A. M., MacDonald, A. W. III, Ferrell, R. E., Halder, I., Flory, J. D., & Manuck, S. B. (2013). The brain-derived neurotropic factor Val66Met polymorphism moderates an effect of physical

activity on working memory performance. *Psychological Science, 24*(9), 1770–1779. https://doi.org/10.1177/0956797613480367

Erickson, K. I., Prakash, R. S., Voss, M. W., Chaddock, L., Heo, S., McLaren, M., Pence, B. D., Martin, S. A., Vieira, V. J., Woods, J. A., McAuley, E., & Kramer, A. F. (2010). Brain-derived neurotropic factor is associated with age-related decline in hippocampal volume. *The Journal of Neuroscience, 30*(15), 5368-5375. https://doi.org/10.1523/JNEUROSCI.6251-09.2010

Erickson, K. I., Voss, M. W., Prakash, R. S., Basak, C., Szabo, A., Chaddock, L., Kim, J. S., Heo, S., Alves, H., White, S. M., Wojcicki, T. R., Mailey, E., Vieira, V. J., Martin, S. A., Pence, B. D., Woods, J. A., McAuley, E., & Kramer, A. F. (2011). Exercise training increases size of hippocampus and improves memory. *Proceedings of the National Academy of Sciences of the United States of America, 108*(7), 3017–3022. https://doi.org/10.1073/pnas.1015950108

Esteban-Fernández, A., Rendeiro, C., Spencer, J. P. E., Gigorro del Coso, D., González de Llano, M. D., Bartolomé, B., & Moreno-Arribas, M. V. (2017). Phenolic metabolites and aroma compounds from wine in human SH-SY5Y neuroblastoma cells and their putative mechanisms of action. *Frontiers in Nutrition, 4*(3). https://doi.org/10.3389/fnut.2017.00003

Fadnes, L. T., Økland, J.-M., Haaland, Ø. A., & Johansson, K. A. (2022) Estimating impact of food choices on life expectancy: A modeling study. *PLoS Medicine 19*(2), e1003889. https://doi.org/10.1371/journal.pmed.1003889

Farooqui, T., & Farooqui, A. (2017). *Role of the Mediterranean diet in the brain and neurodegenerative diseases.* Academic Press.

Farzaei, M. H., Rahimi, R., Nikfar, S., & Abdollahi, M. (2018). Effects of resveratrol on cognitive and memory performance and mood: A meta-analysis of 225 patients. *Pharmacological Research, 128*, 338-344. https://doi.org/10.1016/j.phrs.2017.08.009

Feeney, J., O'Leary, N., Moran, R., O'Halloran, A. M., Nolan, J. M., Beatty, S., Young, I. S., & Kenny, R. A. (2017). Plasma lutein and zeaxanthin are associated with better cognitive function across multiple domains in a large population-based sample of older adults: Findings from the Irish Longitudinal Study on Aging. *The Journals of Gerontology: Series A, 72*(10), 1431–1436. https://doi.org/10.1093/gerona/glw330

Fenech, M. (2017). Vitamins associated with brain aging, mild cognitive impairment, and Alzheimer disease: Biomarkers, epidemiological and experimental evidence, plausible mechanisms, and knowledge gaps. *Advances in Nutrition, 8*(6), 958-970. https://doi.org/10.3945/an.117.015610

Firth, J., Marx, W., Dash, S., Carney, R., Teasdale, S. B., Solmi, M., Studds, B., Schuch, F. B., Carvalho, A. F., Jacka, F., & Sarris, J. (2019). The effects of dietary improvements on symptoms of depression and anxiety: A meta-analysis of randomized controlled trials. *Psychosomatic Medicine, 81*(3), 265-280. https://doi.org/10.1097/PSY.0000000000000673

Fitzgerald, K. N., Hodges, R., Hanes, D., Stack, E., Cheishvili, D., Szyf, M., Henkel, J., Twedt, M. W., Giannopoulou, D., Herdell, J., Logan, S., & Bradley, R. (2021). Potential reversal of epigenetic age using a diet and lifestyle intervention: a pilot randomized clinical trial. *Aging, 13*(7), 9419–9432. https://doi.org/10.18632/aging.202913

Fliton, M., Macdonald, I. A., & Knight, H. M. (2019). Vitamin intake is associated with improved visuospatial and verbal semantic memory in middle-aged individuals. *Nutritional Neuroscience, 22*(6), 401-408.

Forsythe, P., Bienenstock, J., & Kunze, W. A. (2014). Vagal pathways for microbiome-brain-gut axis communication. In Lyte, M., & Cryan, J. F. (Eds.) *Microbial endocrinology: The microbiota gut-brain access in health and disease,* (pp. 115-133). Springer.

Fraga, M. F., Ballestar, E., Paz, M. F., Ropero, S., Setien, F., Ballestar, M. L., Heine-Suner, D., Cigudosa, J. C., Urioste, M., Benitez, J., Boix-Chornet, M., Sanchez-Aguilera, A., Ling, C., Carlsson, E., Poulsen, P., Vaag, A., Stephan, Z., Spector, T. D., Wu, Y.-Z., Plass, C., & Esteller, M. (2005). Epigenetic differences arise during the lifetime of monozygotic twins. *Proceedings of the National Academy of Sciences of the United States of America, 102(30),* 10604-10609. https://doi.org/10.1073/pnas.0500398102

Frasure-Smith, N., & Lesperance, F. (2005). Reflections on depression as a cardiac risk factor. *Psychosomatic Medicine, 67*, Suppl 1, S19-S25. https://doi.org/10.1097/01.psy.0000162253.07959.db

Freedman, R., Hunter, S. K., Law, A. J., D'Alessandro, A., Noonan, K., Wyrwa, A., & Hoffman, M. C. (2020). Maternal choline and respiratory coronavirus effects on fetal brain development. *Journal of Psychiatric Research, 128*, 1-4. https://doi.org/10.1016/j.jpsychires.2020.05.019

Fulton, J. L., Dinas, P. C., Carrillo, A. E., Edsall, J. R., Ryan, Emily J., & Ryan, Edward J. (2018). Impact of genetic variability on physiological responses to caffeine in humans: A systematic review. *Nutrients, 10*(10), 1373. https://doi.org/10.3390/nu10101373

Ganesan, K. & Xu, B. (2017). Polyphenol-rich lentils and their health promoting effects. *International Journal of Molecular Sciences, 18*(11), 2390. https://doi.org/10.3390/ijms18112390

Gardener, S. L., Rainey-Smith, S. R., Villemagne, V. L., Fripp, J., Doré, V., Bourgeat, P., Taddei, K., Fowler, C., Masters, C. L., Maruff, P., Rowe, C. C., Ames, D., & Martins, R. N. (2021). Higher coffee consumption is associated with slower cognitive decline and less cerebral Aβ-amyloid accumulation over 126 months: Data from the Australian Imaging, Biomarkers, and Lifestyle Study**.** *Frontiers in Aging Neuroscience, 13,* 744872. https://doi.org/10.3389/fnagi.2021.744872

Geary, D. C. (2019). The spark of life and the unification of intelligence, health, and aging, *Current Directions in Psychological Science, 28*(3), 223-228. https://doi.org/10.1177/0963721419829719

Gong, Z., Huang, J., Xu, B., Ou, Z., Zhang, L., Lin, X., Ye, X., Kong, X., Long, D., Sun, X., Xu, L., Li, Q., & Xuan, A. (2019). Urolithin A attenuates memory impairment and neuroinflammation in APP/PS1 mice. *Journal of Neuroinflammation, 16*(1), 62. https://doi.org/10.1186/s12974-019-1450-3

González-Domínguez, R., Castellano-Escuder, P., Carmona, F., Lefèvre-Arbogast, S., Low, D. Y., Du Preez, A., Ruigrok, S. R., Manach, C., Urpi-Sarda, M., Korosi, A., Lucassen, P. J., Aigner, L., Pallàs, M., Thuret, S., Samieri, C., Sánchez-Pla, A., & Andres-Lacueva, C. (2021). Food and microbiota metabolites associate with cognitive decline in older subjects: A 12-year prospective study**.** *Molecular*

*Nutrition & Food Research, 65*(23), e2100606. https://doi.org/10.1002/mnfr.202100606

Goodwill A. M., & Szoeke C. A. (2017). Systematic review and meta-analysis of the effect of low vitamin D on cognition. *Journal of the American Geriatric Society, 65*, 2161–2168. https://doi.org/10.1111/jgs.15012

Grabowska, W., Sikora, E., & Bielak-Zmijewska, A. (2017). Sirtuins, a promising target in slowing down the aging process. *Biogerontology, 18*(4), 447–476. https://doi.org/10.1007/s10522-017-9685-9

Grammatikopoulou, M. G., Goulis, D. G., Gkiouras, K., Theodoridis, X., Gkouskou, K. K., Evangeliou, A., Dardiotis, E., & Bogdanos, D. P. (2020). To keto or not to keto? A systematic review of randomized controlled trials assessing the effects of ketogenic thereapy on Alzheimer disease. *Advances in Nutrition, 11*(6), 1583–1602. https://doi.org/10.1093/advances/nmaa073

Gratton, G., Weaver, S. R., Burley, C. V., Low, K. A., Maclin, E. L., Johns, P. W., Pham, Q. S., Lucas, S. J. E., Fabiani, M., & Rendeiro, C. (2020). Dietary flavanols improve cerebral cortical oxygenation and cognition in healthy adults. *Scientific Reports, 10*(1), 1-13. https://doi.org/10.1038/s41598-020-76160-9

Greenwood, B. N., Foley, T. E., Burhans, D., Maier, S. F., & Fleshner, M. (2005). The consequences of uncontrollable stress are sensitive to duration of prior wheel running. *Brain Research, 1033*(2), 164–178. https://doi.org/10.1016/j.brainres.2004.11.037

Gregory, A. C., Zablocki, O., Zayed, A. A., Howell, A., Bolduc, B., & Sullivan, M. B. (2020). The gut virome database reveals age-dependent patterns of virome diversity in the human gut. *Cell Host and Microbe, 28*(5), 724-740. https://doi.org/10.1016/j.chom.2020.08.003

Grodstein, F., Lemos, B., Yu, L., Iatrou, A., De Jager, P. L., & Bennett, D. A. (2020). Characteristics of epigenetic clocks across blood and brain tissue in older women and men. *Frontiers of Neuroscience, 14*, 555307. https://doi.org/10.3389/fnins.2020.555307

Grossmann, I., Karasawa, M., Izumi, S., Na, J., Varnum, M. E. W., Kitayama, S., & Nisbett, R. E. (2012). Aging and wisdom: Culture matters. *Psychological Science, 23*(10), 1059-1066. https/doi.org/10.1177/0956797612446025

Gunter, M. J., Murphy, N., Cross, A. J., Dossus, L., Dartois, L., Fagherazzi, G., Kaaks, R. et al. (2017). Coffee drinking and mortality in 10 European countries: A multinational cohort study. *Annals of Internal Medicine, 167*(4), 236–247. https://doi.org/10.7326/M16-2945

Hanna-Pladdy, B., & Gajewski, B. (2012). Recent and past musical activity predicts cognitive aging variability: Direct comparison with general lifestyle activities. *Frontiers in Human Neuroscience, 6*, 198. https://doi.org/10.3389/fnhum.2012.00198. eCollection 2012

Harrington, K. D., Aschenbrenner, A. J., Maruff, P., Masters, C. L., Fagan, A. M., Benzinger, T. L. S., Gordon, B. A., Cruchaga, C., Morris, J. C., & Hassenstab, J. (2021). Undetected neurodegenerative disease biases estimates of cognitive change in older adults. *Psychological Science, 32*(6), 849-860. https://doi.org/10.1177/0956797620985518

Harvanek, Z. M., Fogelman, N., Xu, K., & Sinha, R. (2021). Psychological and biological resilience modulates the effects of stress on epigenetic aging.

*Translational Psychiatry, 11*(1). Article 601 (2021). https://doi.org/10.1038/s41398-021-01735-7

Haussler, M. R., Whitfield, G. K., Haussler, C. A., Sabir, M. S., Khan, Z., Sandoval, R., & Jurutka, P. W. (2016). 1,25-Dihydroxyvitamin D and klotho: A tale of two renal hormones coming of age. *Vitamins and Hormones, 100*, 165-230. https://doi.org/10.1016/bs.vh.2015.11.005

Hawkins, M. A. W., Keirns, N. G., & Helms, Z. (2018). Carbohydrates and cognitive function. *Current Opinion in Clinical Nutrition and Metabolic Care, 21*(4), 302–307. https://doi.org/10.1097/MCO.0000000000000471

Hayek, M. N., Harwatt, H., Ripple, W. J., & Mueller, N. D. (2020). The carbon opportunity cost of animal-sourced food production on land**.** *Nature Sustainability, 4*, 21-24. https://doi.org/10.1038/s41893-020-00603-4

Hennebelle, M., Champeil-Potokar, G., Lavialle, M., Vancassel, S., & Denis, I. (2014). Omega-3 polyunsaturated fatty acids and chronic stress-induced modulations of glutamatergic neurotransmission in the hippocampus. *Nutrition Reviews, 72*(2), 99–112. https://doi.org/10.1111/nure.12088

Hertzog, C., Kramer, A. F., Wilson, R. S., & Lindenberger, U. (2008). Enrichment effects on adult cognitive development: Can the functional capacity of older adults be preserved and enhanced. *Psychological Science in the Public Interest, 9*(1), 1–65. https://doi.org/10.1111/j.1539-6053.2009.01034.x

Hess, T. M. (2005). Memory and aging in context. *Psychological Bulletin, 131*(3), 383–406. https://doi.org/10.1037/0033-2909.131.3.383

Heyn, P., Abreu, B. C., & Ottenbacher, K. J. (2004). The effects of exercise training on elderly persons with cognitive impairment and dementia: A meta-analysis. *Archives of Physical Medicine and Rehabilitation, 85*(10), 1694–1704. https://doi.org/10.1016/j.apmr.2004.03.019

Ho L., Chen L. H., Wang, J., Zhao, W., Talcott, S. T., Ono, K., Teplow, D., Humala, N., Cheng, A., Percival, S. S., Ferruzzi, M., Janle, E., Dickstein, D. L., & Pasinetti, G. M. (2009). Heterogeneity in red wine polyphenolic contents differentially influences Alzheimer's disease-type neuropathology and cognitive deterioration. *Journal of Alzheimers Disease, 16*(1), 59–72. https://doi.org/10.3233/JAD-2009-0916

Hole, K. L. & Williams, R. J. (2021). Flavonoids as an intervention for Alzheimer's disease: Progress and hurdles toward defining a mechanism of action. *Brain Plasticity, 6*(2), 167-192. https://doi.org/10.3233/BPL-200098

Holland, T. M., Agarwal, P., Wang, Y., Leurgans, S. E., Bennett, D. A., Booth, S. L., & Morris, M. C. (2020). Dietary flavonols and risk of Alzheimer dementia. *Neurology, 94*(16), e1749–e1756. https://doi.org/10.1212/WNL.0000000000008981

Horn, J. L., & Masunaga, H. (2000). New directions for research into aging and intelligence: the development of expertise. In Perfect, T. J., & Maylor, E. A. (Eds.) *Models of cognitive aging,* (pp. 125-159). Oxford University Press.

Huang, Y., Huang, X., Zhang, L., Han, F., Pang, K. L., Li, X., & Shen, J. Y. (2018). Magnesium boosts the memory restorative effect of environmental enrichment in Alzheimer's disease mice. *CNS Neuroscience & Therapeurics, 24*(1):70-79. https://doi.org/10.1111/cns.12775

Icahn School of Medicine at Mount Sinai (2022). Best to get your vitamins from your food. *Focus on Healthy Aging, 25*(2), 1-6.

Iqbal, R., Dehghan, M., Mente, A., Rangarajan, S., Wielgosz, A., Avezum, A., Seron, P., AlHabib, K. F., Lopez-Jaramillo, P., Swaminathan, S., Mohammadifard, N., Zatońska, K., Bo, H., Varma, R. P., Rahman, O., Yusufali, AH., Lu, Y., Ismail, N., Rosengren, A., … Yusuf, S., on behalf of the PURE study. (2021). Associations of unprocessed and processed meat intake with mortality and cardiovascular disease in 21 countries [Prospective Urban Rural Epidemiology (PURE) Study]: a prospective cohort study, *The American Journal of Clinical Nutrition*, *114*(24), 1049-1058. https://doi.org/10.1093/ajcn/nqaa448

Jacka, F. N., Cherbuin, N., Anstey, K. J., Schdev, P., & Butterworth, P. (2015). Western diet is associated with a smaller hippocampus: A longitudinal investigation. *BMC Medicine, 13*, 215. https://doi.org/10.1186/s12916-015-0461-x

Jacobs, T. L., Epel, E. S., Lin, J., Blackburn, E. H., Wolkowitz, O. M., Bridwell, D. A., Zanesco, A. P., Aiche, S. R., Sahdra, D. K., MacLean, K. A., King, B. G., Shaver, P. R., Rosenberg, E. L., Ferrer, E., Wallace, B. A., & Saron, C. D. (2010). Intensive meditation training, immune cell telomerase activity, and psychological mediators. *Psychoneuroendocrinology, 36*(5), 664-681. https://doi.org/10.1016/j.psyneuen.2010.09.010

Jefferson, A. L., Himali, J. J., Beiser, A. S., Au, R., Massaro, J. M., Seshadri, S., Gona, P., Salton, C. J., DeCarli, C., O'Donnel, C. J., Benjamin, E. J., Wolf, P. A., & Manning, W. J. (2010). Cardiac index is associated with brain aging: The Framingham Heart Study. *Circulation, 122*(7), 690–697. https://doi.org/10.1161/CIRCULATIONAHA.109.905091

Jernerén, F., Cederholm, T., Refsum, H., Smith, A. D., Turner, C., Palmblad, J., Eriksdotter, M., Hjorth, E., Faxen-Irving, G., Wahlund, L-O., Schultzberg, M., Basun, H., & Freund-Levi, Y. (2019). Homocysteine status modifies the treatment effect of Omega-3 fatty acids on cognition in a randomized clinical trial in mild to moderate Alzheimer's disease: The OmegAD Study. *Journal of Alzheimer's Disease, 69*(1), 189-197. https://doi.org/10.3233/JAD-181148

Kalaras, M. D., Richie, J. P., Calcagnotto, A., & Beelman, R. B. (2017). Mushrooms: A rich source of the antioxidants ergothioneine and glutathione. *Food Chemistry, 233*. https://doi.org/101016j.foodchem.2017.04.109

Kamkaew, N., Scholfield, C. N., Ingkaninan, K., Taepavarapruk, N., & Chootip, K. (2013). *Bacopa monnieri* increases cerebral blood flow in rat independent of blood pressure. *Phytotherapy Research, 27*(1), 135–138. https://doi.org/10.1002/ptr.4685

Kaplan, B. J., Rucklidge, J. J., Romijn, A., & McLeod, K. (2015). The emerging field of nutritional mental health: Inflammation, the microbiome, oxidative stress, and mitochondrial function. *Clinical Psychological Science, 3*(6), 964-980. https://doi.org/10.1177/2167702614555413

Karlamangla, A. S., Singer, B. H., Chodosh, J., McEwen, B. S., & Seeman, T. S. (2005). Urinary cortisol excretion as a predictor of incident cognitive impairment. *Neurobiology of Aging, 26*, Suppl 1, 80-84. https://doi.org/10.1016/j.neurobiolaging.2005.09.037

Kazdin, A. E. (2016). Editor's introduction: Special series on nutrition and mental health. *Clinical Psychological Science, 4*(6), 1080-1081. https://doi.org/10.1177/2167702616651051

Kiechl, S., Pechlaner, R., Willeit, P., Notdurfter, M., Paulweber, B., Willeit, K., Werner, P., Ruckenstuhl, C., Iglseder, B., Weger, S., Mairhofer, B., Gartner, M., Kedenko, L., Chmelikova, M., Stekovic, S., Stuppner, H., Oberhollenzer, F., Kroemer, G., Mayr, M., … Willeit, J. (2018). Higher spermidine intake is linked to lower mortality: A prospective population-based study. *American Journal of Clinical Nutrition, 108*(2), 371-380. https://doi.org/10.1093/ajcn/nqy102

Kiely, A., Ferland, G., Ouliass, B., O'Toole, P. W., Purtill, H., & O'Connor, E. M. (2020). Vitamin K status and inflammation are associated with cognition in older Irish adults, *Nutritional Neuroscience, 23*(8), 591-599. https://doi.org/10.1080/1028415X.2018.1536411

Kirkland, A. E., Sarlo, G. L., & Holton, K. (2018). The role of magnesium in neurological disorders. *Nutrients, 10*(6), 730. https://doi.org/10.3390/nu10060730

Klinedinst, B. S., Le, S. T., Larsen, B., Pappas, C., Hoth, N. J., Pollpeter, A., Wang, Q., Wang, Y., Yu, S., Wang, L., Allenspach, K., Mochel, J. P., Bennett, D. A., & Willette, A. A. (2020). Genetic factors of Alzheimer's disease modulate how diet is associated with long-term cognitive trajectories: A UK Biobank study. *Journal of Alzheimer's Disease, 78*(3), 1245-1257. https://doi.org/10.3233/JAD-201058

Kongkeaw, C., Dilokthornsakul, P., Thanarangsarit, P., Limpeanchob, N., & Scholfield, N. (2014). Meta-analysis of randomized controlled trials on cognitive effects of *Bacopa Monnieri* extract. *Journal of Ethnopharmacology, 151*(1), 528-535. https://doi.org/10.1016/j.jep.2013.11.008

Konttinen, H., Cabral-da-Silva, M., Ohtonen, S., Wojciechowski, S., Shakirzyanova, A., Caligola, S., Giugno, R., Ishchenko, Y., Hernandez, D., Fazaludeen, M. F., Eamen, S., Budia, M. G., Fagerlund, I., Scoyni, F., Korhonen, P., Huber, N., Haapasalo, A., Hewitt, A. W., Vickers, J., … Malm, T. (2019). PSEN1ΔE9, APPswe, and APOE4 confer disparate phenotypes in human iPSC-derived microglia. *Stem Cell Reports,* 13(4), 669-683. https://doi.org/10.1016/j.stemcr.2019.08.004

Krikorian, R., Shidler, M. D., Dangelo, K., Couch, S. C., Benoit, S., C., & Clegg, D. J. (2012). Dietary ketosis enhances memory in mild cognitive impairment. *Neurobiology of Aging, 33*(2), 425.e19–425.e27. https://doi.org/10.1016/j.neurobiolaging.2010.10.006

Kumar, N., Abichandani, L. G., Thawani, V., Gharpure, K. J., Naidu, M. U. R., & Ramana, G. V. (2016). Efficacy of standardized extract of Bacopa monnieri (Bacognize®) on cognitive functions of medical students: a six-week, randomized placebo-controlled trial. *Evidence Based Complementary and Alternative Medicine, eCAM, 2016*, 4103423. https://doi.org/10.1155/2016/4103423

Kumar, P., Liu, C., Hsu, J. W., Chacko, S., Minard, C., Jahoor, F., & Sekhar, R. V. (2021). Glycine and N-acetylcysteine (GlyNAC) supplementation in older adults improves glutathione deficiency, oxidative stress, mitochondrial dysfunction, inflammation, insulin resistance, endothelial dysfunction, genotoxicity, muscle strength, and cognition: Results of a pilot clinical trial**.** *Clinical and Translational Medicine, 11*(3), e372. https://doi.org/10.1002/ctm2.372

Laird, E., O'Halloran, A., Molloy, A., Healy, M., Hernandez, B., O'Connor, D., Kenny R. A. & Briggs, R. (2021). Low vitamin B12 but not folate is associated with incident depressive symptoms in community-dwelling older adults: A 4-year longitudinal study. *British Journal of Nutrition,* 1-22. Advance online publication. https://doi.org/10.1017/S0007114521004748

Lam, A. B., Kervin, K., & Tanis, J. E. (2021). Vitamin B12 impacts amyloid beta-induced proteotoxicity by regulating the methionine/S-adenosylmethionine cycle**.** *Cell Reports. 36*(13), 109753. https://doi.org/10.1016/j.celrep.2021.109753

Lam, V., Takechi, R., Hackett, M. J., Francis, R., Bynevelt, M., Celliers, L. M., Nesbit, M., Mamsa, S., Arfuso, F., Das, S., Koentgen, F., Hagan, M., Codd, L., Richardson, K., O'Mara, B., Scharli, R. K., Morandeau, L., Gauntlett, J., Leatherday, C., Boucek, J., & Mamo, J. C. L. (2021). Synthesis of human amyloid restricted to liver results in an Alzheimer disease–like neurodegenerative phenotype. *PLoS Biology 19*(9): e3001358. https://doi.org/10.1371/journal.pbio.3001358

Lassale, C., Batty, G. D., Baghdadli, A., Jacka, F., Sánchez-Villegas, A., Kivimäki, M., & Akbaraly, T. (2019). Healthy dietary indices and risk of depressive outcomes: a systematic review and meta-analysis of observational studies. *Molecular Psychiatry 24,* 965–986. https://doi.org/10.1038/s41380-018-0237-8

Lauretti, E., Iuliano, L., & Pratic D. (2017). Extra-virgin oive oil ameliorates cognition and neuropathology of the 3xTg mice: Role of autophagy. *Annals of Clinical and Translational Neurology 4*(8), 564–574. https://doi.org/10.1002/acn3.431

Leclerc, E., Trevizol, A. P., Grigolon, R. B., Subramaniapillai M., McIntyre, R. S., Brietzke, E., & Mansur, R. G. (2020). The effect of caloric restriction on working memory in healthy non-obese adults. *CNS Spectrum, 25*(1), 2–8. https://doi.org/10.1017/S1092852918001566, 2-8.

LeDoux, J. (2002). *Synaptic self*: *How our brains become who we are*. Penguin Books.

Lee, H., & Birks, J. S. (2018). Ginkgo biloba for cognitive improvement in healthy individuals. *Cochrane Database Systematic Reviews, 2018*(8), CD004671. https://doi.org/10.1002/14651858.CD004671

Li, J., Romero-Garcia, R., Suckling, J., & Feng, L. (2019). Habitual tea drinking modulates brain efficiency: Evidence from brain connectivity evaluation. *Aging, 11*, 3876. https://doi.org/10.18632/aging.102023

Li, Z., Li, B., Song, X., & Zhang, D. (2017). Dietary zinc and iron intake and risk of depression: A meta-analysis. *Psychiatry Research, 251*, 41-47. https://doi.org/10.1016/j.psychres.2017.02.006

Listabarth, S., König, D., Vyssoki, B., & Hametner, S. (2020). Does thiamin protect the brain from iron overload and alcohol-related dementia? *Alzheimer's & Dementia, 16*(11), 1591-1595. https://doi.org/10.1002/alz.12 146

Liu, H., Ye, M., & Guo, H. (2019). An updated review of randomized clinical trials testing the improvement of cognitive function of *Ginkgo biloba* extract in healthy people and Alzheimer's patients. *Frontiers of Pharmacology, 10*, 1668. https://doi.org/10.3389/fphar.2019.01688

Liu, Q. P., Wu, Y. F., Cheng, H. Y., Xia, T., Ding, H., Wang, H., Wang, Z. M., & Xu, Y. (2016). Habitual coffee consumption and risk of cognitive decline/

dementia: A systematic review and meta-analysis of prospective cohort studies. *Nutrition*, *32*(6), 628-636. https://doi.org/10.1016/j.nut.2015.11.015

Loma Linda University Adventist Health Sciences Center (2018, April 24). Dark chocolate consumption reduces stress and inflammation: Data represent first human trials examining the impact of dark chocolate consumption on cognition and other brain functions. *ScienceDaily*. Retrieved March 27, 2022 from www.sciencedaily.com/releases/2018/04/180424133628.htm

Lundgaard, I., Wang, W., Eberhardt, A., Vinitsky, H. S., Reeves, B. C., Peng, S., Lou, N., Hussain, R., & Nedergaard, M. (2018). Beneficial effects of low alcohol exposure, but adverse effects of high alcohol intake on glymphatic function. *Scientific Reports, 8*(1), 2246. https://doi.org/10.1038/s41598-018-20424-y

Lupien, S. J., DeLeon, M. J., DeSanti, S., Convit, A., Tarshish, C., Nair, N. P. V., Thakur, M., McEwen, B. S., Hauger, R. L., & Meaney, M. J. (1998). Cortisol levels during human aging predict hippocampal atrophy and memory deficits. *Nature Neuroscience, 1*(1), 69-73. https://doi.org/10.1038/271

McIntosh, C., & Chick, J. (2004). Alcohol and the nervous system. *Journal of Neurology, Neurosurgery & Psychiatry, 75*(Issue Supplement 3). http://dx.doi.org/10.1136/jnnp.2004.045708

Madeo, F., Hofer, S. J., Pendl, T., Bauer, M. A., Eisenberg, T., Carmona-Gutierrez, D., & Kroemer, G. (2020). Nutritional aspects of spermidine. *Annual Review of Nutrition, 40*, 135-159. https://doi.org/10.1146/annurev-nutr-120419-015419

Manap, A. S. A., Madhavan, P., Chia, Y. Y., Arya, A., Wong, E. H., Rizwan, F., Bindal, U., & Koshy, S. (2019). *Bacopa monnieri*, a neuroprotective lead in Alzheimer disease: A review on its properties, mechanisms of action, and preclinical and clinical studies. *Drug Target Insights, 13,* 1-13. https://doi.org/10.1177/1177392819866412

Martensson, J., Eriksson, J., Bodammer, N. C., Lindgren, M., Johansson, M., Nyberg, L., & Lovden, M. (2012). Growth of language-related brain areas after foreign language learning. *Neuroimage, 63*(1), 240–244. https://doi.org/10.1016/j.neuroimage.2012.06.043

Martikainen, J., Jalkanen, K., Heiskanen, J., Lavikainen, P., Peltonen, M., Laatikainen, T., & Lindström, J. (2021). Type-2 diabetes-related health economic impact associated with increased whole grains consumption among adults in Finland. *Nutrients*, *13*, 3583. https://doi.org/10.3390/nu13103583

Martinez-Lapiscina, E. H., Clavero, P., Toledo, E., Estruch, R., Salas-Salvado, J., San Julian, B., Sanchez-Tainta, A., Ros, E., Valls-Pedret, C., & Martinez-Gonzalez, M.A. (2013). Mediterranean diet improves cognition: the PREDIMED-NAVARRA randomised trial. *Journal of Neurology, Neurosurgery, and Psychiatry, 84*(12), 1318–1325. https://doi.org/10.1136/jnnp-2012-304792

Marx, W., Lane, M., Rocks, T., Ruusunen, A., Loughman, A., Lopresti, A., Marshall, S., Berk, M., Jacka, F., & Dean, O. M. (2019). Effect of saffron supplementation on symptoms of depression and anxiety: A systematic review and meta-analysis. *Nutrition Reviews, 77*(8), 557-571. [nuz023]. https://doi.org/10.1093/nutrit/nuz

Maserejian, N. N., Hall, S. A., & McKinlay, J. B. (2012). Low dietary or supplemental zinc is associated with depression symptoms among women, but not men, in a population-based epidemiological survey. *Journal of Affective Disorders, 136*(3), 781-788. https://doi.org/10.1016/j.jad.2011-09-039

Mather, M., & Lighthall, N. R. (2012). Both risk and reward are processed differently in decisions made under stress. *Current Directions in Psychological Science, 21*(2), 36–41. https://doi.org/10.1177/0963721411429452

Matsui, T., Ishikawa, T., Hitoshi, I., Okamoto, M., Inoue, K., Min-chul, L., Fujikawa, T., Ichitani, Y., Kawanaka, K., & Soya, H. (2012). Brain glycogen supercompensation following exhaustive exercise. *Journal of Physiology, 590*(3), 607–616. https://doi.org/10.1113/jphysiol.2011.217919

Mayne, P. E. & Burne, T. H. J. (2019). Vitamin D in synaptic plasticity, cognitive function, and neuropsychiatric illness. *Trends in Neurosciences, 42*(4), 293-306. https://doi.org/10.1016/j.tins.2019.01.003

Mayneris-Perxachs, J., Castells-Nobau, A., Arnoriaga-Rodríguez, M., Garre-Olmo, J., Puig, J., Ramos, R., Martínez-Hernández, F., Burokas, A., Coll, C., Moreno-Navarrete, J. M., Zapata-Tona, C., Pedraza, S., Pérez-Brocal, V., Ramió-Torrentà, L., Ricart, W., Moya, A., Martínez-García, M., Maldonado, R., & Fernández-Real, J-M. (2022). Caudovirales bacteriophages are associated with improved executive function and memory in flies, mice, and humans**.** *Cell Host & Microbe*, *30*(3), 340-356.e8. https://doi.org/10.1016/j.chom.2022.01.013

Mazidi, M., Kengne, A. P., & Banach, M. (2017). Mineral and vitamin consumption and telomere length among adults in the United States. *Polish Archives of Internal Medicine, 127*, 87-90. https://doi.org/10.20452/pamw. 3927

McBurney, M. I., Tintle, N. L., Vasan, R. S., Sala-Vila, A., & Harris, W. S. (2021). Using an erythrocyte fatty acid fingerprint to predict risk of all-cause mortality: the Framingham Offspring Cohort**.** *The American Journal of Clinical Nutrition*, *114*(6) https://doi.org/10.1093/ajcn/nqab195

McCleery, J., Abraham, R. P., Denton, D. A., Rutjes, A. W., Chong, L-Y., Al-Assaf, A. S., Griffith, D. J., Rafeeq, S., Yaman, H., Malik, M. A., Di Nisio, M., Martinez, G., Vernooij, R. W., & Tabet, N. (2018). Vitamin and mineral supplementation for preventing dementia or delaying cognitive decline in people with mild cognitive impairment. *The Cochrane Database of Systematic Reviews, 11(11), CD011905. https://doi.org/10.1002/14651858.CD011905.pub2*

Meaney, M. J., Aitken, D. H., Bhatnagar, S., & Sapolsky, R. M. (1990). Postnatal handling attenuates neuroendocrine, anatomical, and cognitive dysfunctions associated with aging in female rats. *Neurobiology of Aging, 12*(1), 31–38. https://doi.org/10.1016/0197-4580(91)90036-j

Metcalfe-Roach A., Yu, A. C., Golz, E., Cirstea, M., Sundvick, K., Kliger, D., Foulger, L. H., Mackenzie, M., Finlay, B. B., & Appel-Cresswell, S. (2021). MIND and Mediterranean diets associated with later onset of Parkinson's disease. *Movement Disorders, 36*(4), 977-984. https://doi.org/10.1002/mds.28464.

Mielech, A., Puścion-Jakubik, A., Markiewicz-Żukowska, R., & Socha, K. (2020). Vitamins in Alzheimer's disease: Review of the latest reports. *Nutrients, 12*(11), 3458. https://doi.org/10.3390/nu12113458

Miller, G. E., & Blackwell, E. (2006). Turning up the heat: Inflammation as a mechanism linking chronic stress, depression, and heart disease. *Current Directions in Psychological Science, 15*(6), 269–272. https://doi.org/10.1111/j.1467-8721.2006.00450.x

Mitra, S., Rauf, A., Tareq, A. M., Jahan, S., Emran, T. B., Shahriar, T. G., Dhama, K., Alhumaydhi, F. A., Aljohani, A. S. M., Rebezov, M., Uddin, M. S., Jeandet, P., Shah, Z. A., Shariati, M. A., & Rengasamy, K. R. R. (2021). Potential health benefits of carotenoid lutein: An updated review. *Food and Chemical Toxicology, 154*, 112328. https://doi.org/10.1016/j.fct.2021.112328

Mock, J. T., Chaudhari, K., Sidhu, A., & Sumien, N. (2017). The influence of vitamins E and C and exercise on brain aging. *Experimental Gerontology, 94*, 69-72. https://doi.org/10.1016/j.exger.2016.12.008

Modi, K. K., Rangasamy, S. B., Dasarathi, S., Roy, A., & Pahan, K. (2016). Cinnamon converts poor learning mice to good learners: Implications for memory improvement**.** *Journal of Neuroimmune Pharmacology, 11*(4), 693-707. https://doi.org/10.1007/s11481-016-9693-6

Modi, K. K., Roy, A., Brahmachari, S., Rangasamy, S. B., & Pahan, K. (2015). Cinnamon and its metabolite sodium benzoate attenuate the activation of p21rac and protect memory and learning in an animal model of Alzheimer's disease. *PLoS One_10*(6), e0130398. https://doi.org/10.1371/journal.pone.0130398.eCollection 2015 10:e0130398

Momtaz, S., Hassani, S., Khan, F., Ziaee, M., & Abdollahi, M. (2018). Cinnamon, a promising prospect towards Alzheimer's disease. *Pharmacological Research, 130*, 241-258. https://doi.org/10.1016/j.phrs.2017.12.011

Moore, K., Hughes, C. F., Ward, M., Hoey, L. & McNulty, H. (2018). Diet, nutrition and the ageing brain: Current evidence and new directions. *Proceedings of the Nutrition Society, 77*(2), 152–163. https://doi.org/10.1017/S0029665117004177

Moore, L., Le, T., & Fan, G. (2013). DNA methylation and its basic function. *Neuropsychopharmacology, 38,* 23–38. https://doi.org/10.1038/npp.2012.112

Morley, J. E. (2004). The top 10 hot topics in aging. *The Journals of Gerontology: Series A, 59*(1), M24–M33. https://doi.org/10.1093/gerona/59.1.M24

Morris, M. C., Tangney, C. C., Wang Y., Sacks, F. M., Bennett, D. A., & Aggarwal, N. T. (2015). MIND diet associated with reduced incidence of Alzheimer's disease. *Alzheimer's and Dementia, 11*(9), 1007–1014. https://doi.org/10.1016/j.jalz.2014.11.009

Naoi, M., Shamoto-Nagai, M., & Maruyama, W. (2019). Neuroprotection of multifunctional phytochemicals as novel therapeutic strategy for neurodegenerative disorders: antiapoptotic and antiamyloidogenic activities by modulation of cellular signal pathways. *Nuture Neurology, 14*(1), FLN9. https://doi.org/10.2217/fnl-2018-0028

Napoletano, F., Schifano, F., Corkey, J. M., Guirguis, A., Arillotta, D., Zangani, C., & Vento, A. (2020). The psychonauts' world of cognitive enhancers. *Frontiers in Psychiatry, 11*, 546796. https://doi.org/10.3389/fpsyt.2020.546796

Nemetchek, M. D., Stierle, A. A., Stierle, D. B., & Lurie, D. I. (2017). The Ayurvedic plant *Bacopa monnieri* inhibits inflammatory pathways in the brain. *Journal of Ethnopharmacology, 197*, 92-100. https://doi.org/10.1016/j.jep.2016.07.073

Neshatdoust, S., Saunders, C., Castle, S. M., Vauzour, D., Williams, C., Butler, L., Lovegrove, J. A., & Spencer, J. P. E. (2017). High-flavonoid intake induces cognitive improvements linked to changes in serum brain-derived neurotrophic factor: Two randomised, controlled trials. *Nutrition and Healthy Aging, 4*(1), 81-93. https://doi.org/10.3233/NHA-1615

Ng, Q. X., Venkatanarayanan, N., & Ho, C. Y. (2017). Clinical use of *Hypericum perforatum* (St John's wort) in depression: A meta-analysis. *Journal of Affective Disorders, 210*, 211–221. https://doi.org/10.1016/j.jad.2016.12.048

Nishida, K., Sawada, D., Kuwano, Y., Tanaka, H., Sugawara, T., Aoki, Y., Fujiwara, S., & Rokutan, K. (2017). Daily administration of paraprobiotic *Lactobacillus gasseri* CP2305 ameliorates chronic stress-associated symptoms in Japanese medical students. *Journal of Functional Foods, 36*, 112-121. https://doi.org/10.1016/j.jff.2017.06.031

Niu, Y., Na, L., Feng, R., Gong, L., Zhao, Y., Li, Q., Li, Y., & Sun, C. (2013). The phytochemical, EGCG, extends lifespan by reducing liver and kidney function damage and improving age-associated inflammation and oxidative stress in healthy rats. *Aging Cell, 12*(6), 1041-1049. https://doi.org/10.1111/acel.2013.12.issue-6/issuetoc

Noonan, S., Zaveri, M., Macaninch, E., & Martyn, K. (2020). Food & mood: a review of supplementary prebiotic and probiotic interventions in the treatment of anxiety and depression in adults. *BMJ Nutrition, Prevention & Health, 2020*. bmjnph-2019-000053. https://doi.org/10.1136/bmjnph-2019-000053

Nooyens, A. C. J., Bueno-de-Mesquita1, H. G., van Gelder, B. M., van Boxtel, M. P. J., & Verschuren, W. M. M. (2014). Consumption of alcoholic beverages and cognitive decline at middle age: the Doetinchem Cohort Study. *British Journal of Nutrition, 111*(4), 715–723. https://doi.org/10.1017/S0007114513002845

Nouchi, R., Suiko, T., Kimura, E., Takenaka, H., Murakoshi, M., Uchiyama, A., Aono, M., & Kawashima, R. (2020). Effects of lutein and astaxanthin intake on the improvement of cognitive functions among healthy adults: A systematic review of randomized controlled trials. *Nutrients, 12*(3), 617. https://doi.org/10.3390/nu12030617

Ntranos, A., Park, H.-J., Wentling, M., Tolstikov, V., Amatruda, M., Inbar, B., Kim-Schulze, S., Frazier, C., Button, J., Kiebish, M. A., Lublin, F., Edwards, K., & Casaccia, P. (2021). Bacterial neurotoxic metabolites in multiple sclerosis cerebrospinal fluid and plasma**.** *Brain*, awab320. https://doi.org/10.1093/brain/awab320

Nurk, E., Refsum, H., Drevon, C. A., Tell, G. S., Nygaard, H. A., Engedal, K., & Smith, A. D. (2009). Intake of flavonoid-rich wine, tea, and chocolate by elderly men and women is associated with better cognitive test performance. *Journal of Nutrition, 139*(1), 120–127. https://doi.org/10.3945/jn.108.095182

Nurk, E., Refsum, H., Drevon, C. A., Tell, G. S., Nygaard, H. A., Engedal, K., & Smith, A. D. (2010). Cognitive performance among the elderly in relation to the intake of plant foods. The Hordaland Health Study. *British Journal of Nutrition, 104*(8), 1190-1201. https://doi.org/10.1017/S0007114510001807

Okereke, O. I., Vyas, C. M., Mischoulon, D., Chang, G., Cook, N. R., Weinberg, A., Bubes, V., Copeland, T., Friedenberg, G., Lee, I-M., Buring, J. E., Reynolds

III, C. F., & Manson, J. E. (2021). Effect of long-term supplementation with marine Omega-3 fatty acids vs placebo on risk on depression or clinically-relevant depressive symptoms and on change in mood scores: A randomized clinical trial. *Journal of the American Medical Association, 326*(23), 2385-2394. https://doi.org/10.1001/jama.2021.21187

Oliver, A., Chase, A. B., Weihe, C., Orchanian, S. B., Riedel, S. F., Hendrickson, C. L., Lay, M., Sewall, J. M., Martiny, J. B. H., & Whiteson, K. (2021). High-fiber, whole-food dietary intervention alters the human gut microbiome but not fecal short-chain fatty acids. *mSystems*, *6*(2): e00115-21. https://doi.org/10.1128/mSystems.00115-21

O'Rourke, M. F. (2008). Brain microbleeds, amyloid plaques, intellectual deterioration, and arterial stiffness. *Hypertension, 51*, e20. https://doi.org/10.1161/HYPERTENSIONAHA.107.109199

Oulhaj, A., Jernerén, F., Refsum, H., Smith, A. D., & de Jager, C. A. (2016). Omega-3 fatty acid status enhances the prevention of cognitive decline by B vitamins in Mild Cognitive Impairment. *Journal of Alzheimer's Disease, 50*(2), 547-557. https://doi.org/10.3233/JAD-150777

Ozawa, M., Shipley, M., Kivimaki, M., Singh-Manoux, S., & Brunner, E. J. (2017). Dietary pattern, inflammation and cognitive decline: The Whitehall II prospective cohort study. *Clinical Nutrition, 36*(2), 506-512. https://doi.org/10.1016/j.clnu.2016.01.013

Pagano, G., Pallardó, F. V., Lyakhovich, A., Tiano, L., Fittipaldi, M. R., Toscanesi, M., & Trifuoggi, M. (2020). Aging-related disorders and mitochondrial dysfunction: A critical review for prospect mitoprotective strategies based on mitochondrial nutrient mixtures. *International Journal of Molecular Sciences*, *21*(19), 7060. https://doi.org/10.3390/ijms21197060

Pak, H. H., Haws, S. A., Green, C. L., Koller, M., Lavarias, M. T., Richardson, N. E., Yang, S. E., Dumas, S. N., Sonsalla, M., Bray, L., Johnson, M., Barnes, S., Darley-Usmar, V., Zhang, J., Yen, C-L. E., Denu, J. M., & Lamming, D. W. (2021). Fasting drives the metabolic, molecular and geroprotective effects of a calorie-restricted diet in mice**.** *Nature Metabolism*, *3*(10), 1327-1341. https://doi.org/10.1038/s42255-021-00466-9

Panza, F., Lozupone, M., Solfrizzi, V., Custodero, C., Valiani, V., D'Introno, A., Stella, E., Stallone, R., Piccininni, M., Bellomo, A., Seripa, D., Daniele, A. Greco, A., & Logroscino, G., (2018). Contribution of Mediterranean diet in the prevention of Alzheimer's disease. In Farooqui, T., & Farooqui, A. (Eds.) *Role of the mediterranean diet in the brain and neurodegenerative diseases,* (pp. 139-155). Academic Press.

Park, D. C., Lodi-Smith, J., Drew, L., Haber, S., Hebrank, A., Bischof, G. N., & Aamodt, W. (2014). The impact of sustained engagement on cognitive function in older adults: The synapse project. *Psychological Science, 25*(1), 103–112. https://doi.org/10.1177/0956797613499592

Park, S-Y., Freedman, N. D., Haiman, C. A., LeMarchand, L., Wilkens, L. R., & Setiawan, W. (2017). Association of coffee consumption with total and cause-specific mortality among nonwhite populations. *Annals of Internal Medicine, 167*(4), 228–235. https://doi.org/10.7326/M16-2472

Parkin, A. J. & Rosalind, I. J. (2000). Determinants of age-related memory loss. In Perfect, T. J., & Maylor, E. A. (Eds.) *Models of cognitive aging,* (pp. 188-203). Oxford University Press.

Pase, M. P., Kean, J., Sarris, J., Neale, C., Scholey, A. B., & Stough, C. (2012). The cognitive-enhancing effects of *Bacopa monnieri:* A systematic review of randomized, controlled human clinical trials. *Journal of Alternative and Complementary Medicine, 18*(7), 647-652. https://doi.org/10.1089/acm.2011.0367

Patel, P. & Shah, J. (2017). Role of vitamin D in amyloid clearance via LRP-1 upregulation in Alzheimer's disease: A potential therapeutic target? *Journal of Chemical Neuroanatomy, 85*, 36-42. https://doi.org/10.1016/j.jchemneu.2017.06.007

Pavlopoulos, E., Jones, S., Kosmidis, S., Close, M., Kim, C., Kovalerchik, O., Small, S. A., & Kandel, E. R. (2013). Molecular mechanism for age-related memory loss: The histone-binding protein RbAp48. *Science Translational Medicine, 5*, 200ra115. https://doi.org/10.1126/scitranslmed.3006373

Peeri, N. C., Egan, K. M., Chai, W., & Tao, M-H. (2020). Association of magnesium intake and vitamin D status with cognitive function in older adults: an analysis of US National Health and Nutrition Examination Survey (NHANES) 2011 to 2014. *European Journal of Nutrition*, *60*(1), 465–474. https://doi.org/10.1007/s00394-020-02267-4

Pekar, T., Wendzel, A., Flak, W., Kremer, A., Pauschenwein-Frantsich, S., Gschaider, A., Wantke, F., & Jarisch, R. (2020). Spermidine in dementia: Relation to age and memory performance. *Wien Klin Wochenschr 132*(1-2), 42–46. https://doi.org/10.1007/s00508-019-01588-7

Peth-Nui, T., Wattanathorn, J., Muchimapura, S., Tong-Un, T., Piyavhatkul, N., Rangseekajee, P., Ingkaninan, K., & Vittaya-areekul, S. (2012). Effects of 12-week *Bacopa monnieri* consumption on attention, cognitive processing, working memory, and functions of both cholinergic and monoaminergic systems in healthy elderly volunteers. *Evidence-Based Complementary and Alternative Medicine*: *eCAM 2012,* 606424. https://doi.org/10.1155/2012/606424

Pham, K., Mulugeta, A., Zhou, A., O'Brien, J. T., Llewellyn, D. J., & Hyppönen, E. (2021). High coffee consumption, brain volume and risk of dementia and stroke. *Nutritional Neuroscience*, 1-12, Advance online publication. https://doi.org/10.1080/1028415X.2021.1945858

Piao, M., Cong, X., Lu, Y., Feng, C., & Ge, P. (2017). The role of zinc in mood disorders. *Neuropsychiatry, 7*(4), 378-386. https://doi.org/10.1097/MCO.0b013e32833df61a

Picard, M., McManus, M. J., Gray, J. D., Nasca, C., Moffat, C., Kopinskia, P. K., Seifert, E. L., McEwen, B. S., & Wallace, D. C. (2015). Mitochondrial functions modulate neuroendocrine, metabolic, inflammatory, and transcriptional responses to acute psychological stress. *Proceedings of the National Academy of Sciences of the United States of America, 112*(48), E6614-E6623. https://doi.org/10.1073/pnas.1515733112

Pivina, L., Semenova, Y., Doşa, M. D., Dauletyarova, M., & Bjorklund, G. (2019). Iron deficiency, cognitive functions, and neurobehavioral disorders in

children. *Journal of Molecular Neuroscience, 68*(1), 1–10. https://doi.org/10.1007/s12031-019-01276-1

Prinelli, F., Fratiglioni, L., Kalpouzos, G., Musicco, M., Adorni, F., Johansson, I., Marseglia, A., & Xu W. (2019). Specific nutrient patterns are associated with higher structural brain integrity in dementia-free older adults. *Neuroimage, 199*, 281-288. doi:10.1016/j.neuroimage.2019.05.066

Qin, X.-Y., Cao, C., Cawley, N. X., Liu, T.-T., Yuan, J., Loh, Y. P., & Cheng, Y. (2017). Decreased peripheral brain-derived neurotrophic factor levels in Alzheimer's disease: A meta-analysis study (N=7277). *Molecular Psychiatry, 22*(2), 312-320. https//doi.org/10.1038/mp.2016.62.

Quach, A., Levine, M. E., Tanaka, T., Lu, A. T., Chen, B. H., Ferrucci, L., Ritz, B., Bandinelli, S., Neuhouser, M. L., Beasley, J. M., Snetselaar, L., Wallace, R. B., Tsao, P. S., Absher, D., Assimes, T. L., Stewart, J. D., Li, Y., Hou, L., Baccarelli, A. A., Whitsel, E. A., … Horvath, S. (2017). Epigenetic clock analysis of diet, exercise, education, and lifestyle factors. *Aging, 9*(2), 419–446. https://doi.org/10.18632/aging.101168

Rainey-Smith, S., Brown, B., Sohrabi, H., Shah, T., Goozee, K., Gupta, V., & Martins, R. (2016). Curcumin and cognition: A randomised, placebo-controlled, double-blind study of community-dwelling older adults. *British Journal of Nutrition, 115*(12), 2106-2113. https://doi.org/10.1017/S0007114516001203

Rangel-Huerta, O. D. & Gil, A. (2018). Effect of omega-3 fatty acids on cognition: an updated systematic review of randomized clinical trials. *Nutrition Reviews, 76*, 1–20. https://doi.org/10.1093/nutrit/nux064

Razazan, A., Karunakar, P., Mishra, S. P., Sharma, S., Miller, B., Jain, S., & Yadav, H. (2021). Activation of microbiota sensing – free fatty acid receptor 2 signaling ameliorates amyloid-β induced neurotoxicity by modulating proteolysis-senescence axis**.** *Frontiers in Aging Neuroscience, 13*, 735933. https://doi.org/10.3389/fnagi.2021.735933

Redford, K. E., Rognant, S., Jepps, T. A., & Abbott, G. W. (2021). KCNQ5 potassium channel activation underlies vasodilation by tea**.** *Cellular Physiology and Biochemistry, 55*(S3), 46–64. https://doi.org/10.33594/000000337

Redman, L. M., Smith, S. R., Burton, J. H., Martin, C. K., Il'yasova, D., & Ravussin, E. (2018). Metabolic slowing and reduced oxidative damage with sustained caloric restriction support the rate of living and oxidative damage theories of aging**.** *Cell Metabolism, 27*(4), 805-815. https://doi.org/10.1016/j.cmet.2018.02.019

Rezai-Zadeh, K., Arendash, G. W., Hou, H., Fernandez, F., Jensen, M., Runfeldt, M., Shytle, R. D., & Tan, J. (2008). Green tea epigallocatechin-3-gallate (EGCG) reduces β-amyloid mediated cognitive impairment and modulates tau pathology in Alzheimer transgenic mice. *Brain Research, 1214*, 177-187. https://doi.org/10.1016/j.brainres.2008.02.107

Richard, E. L., Kritz-Silverstein, D., Laughlin, G. A., Fung, T. T., Barrett-Connor, E., & McEvoy, L. K. (2017). Alcohol intake and cognitively healthy longevity in community-dwelling adults: the Rancho Bernardo study. *Journal of Alzheimer's Disease, 59*(3), 803-814. https://doi.org/10.1093/geroni/igx004.1686

Rivas, A. (2013, August 4). More people than ever chose wine over beer: Did wine's health benefits win over drinkers? *Medical Daily.*

Rodrigues, R. R., Gurung, M., Li, Z., García-Jaramillo, M., Greer, R., Gaulke, C., Bauchinger, F., You, H., Pederson, J. W., Vasquez-Perez, S., White, K. D., Frink, B., Philmus, B., Jump, D. B., Trinchieri, G., Berry, D., Sharpton, T. J., Dzutsev, A., Morgun, A., & Shulzhenko, N. (2021). Transkingdom interactions between *Lactobacilli* and hepatic mitochondria attenuate western diet-induced diabetes. *Nature Communications, 12*(1), 101. https://doi.org/10.1038/s41467-020-20313-x

Roodenrys, S., Booth, D., Bulzomi S., Phipps, A., Micallef, C., & Smoker, J. (2002). Chronic effects of Brahmi (*Bacopa monnieri*) on human memory. *Neuropsychopharmacology, 27*(2), 279–281. https://doi.org/10.1016/S0893-133X(01)00419-5

Rossman, M. J., Santos-Parker, J. R., Steward, C. A. C., Bispham, N. Z., Cuevas, L. M., Rosenberg, H. L., Woodward, K. A., Chonchol, M., Gioscia-Ryan, R. A., Murphy, M. P., & Seals, D. R. (2018). Chronic supplementation with a mitochondrial antioxidant (MitoQ) improves vascular function in healthy older adults. *Hypertension. 71*(6), 1056–1063. https://doi.org/10.1161/hypertensionaha.117.10787

Roth, T. L., Lubin, F. D., Funk, A. J., & Sweatt, J. D. (2009). Lasting epigenetic influence of early-life adversity on the BDNF gene. *Biological Psychiatry, 65*(9), 760–769. https://doi.org/10.1016/j.biopsych.2008.11.028

Ruan, Q., Ruan, J., Zhang, W., Qian, F., & Yu, Z. (2018). Targeting NAD+ degradation: The therapeutic potential of flavonoids for Alzheimer's disease and cognitive frailty. *Pharmacological Research, 128*, 345-358. https://doi.org/10.1016/j.phrs.2017.08.010

Ryu, D., Mouchiroud, L., Andreux, P. A., Katsyuba, E., Moullan, N., Nicolet-dit-Félix, A. A., Williams, E. G., Jha, P., Sasso, G. L., Huzard, D., Aebischer, P., Sandi, C., Rinsch, C., & Auwerx J. (2016). Urolithin A induces mitophagy and prolongs lifespan in *C. elegans* and increases muscle function in rodents. *Nature Medicine, 22*(8), 879–888. https://doi.org/10.1038/nm.4132

Saenghong, N., Wattanathorn, J., Muchimapura, S., Tongun, T., Piyavhatkul, N., Banchonglikitkul, C., & Kajsongkram, T. (2012). *Zingiber officinale* improves cognitive function of the middle-aged healthy women. *Evidence-Based Complementary and Alternative Medicine, 2012*(9), Article ID 383062. https://doi.org/10.1155/2012/383062

Sahardi, N. F. N. M., & Makpol, S. (2019). Ginger (*Zingiber officinale* Roscoe) in the pevention of ageing and degenerative diseases: Review of current evidence. *Evidence-Based Complementary and Alternative Medicine: eCAM, 2019,* 5054395. https://doi.org/10.1155/2019/5054395

Sakurai, K., Shen, C., Shiraishi, I., Inamura, N., & Hisatsune, T. (2021). Consumption of oleic acid on the preservation of cognitive functions in Japanese elderly individuals. *Nutrients, 13*(2), 284. https://doi.org/10.3390/nu13020284

Salomón, T., Sibbersen, C., Hansen, J., Britz, D., Svart, M. V., Voss, T. S., Møller, N., Gregersen, N., Jørgensen, K. A., Palmfeldt, J., Poulsen, T. B., & Johannsen, M. (2017). Ketone body acetoacetate buffers methylglyoxal via a non-

enzymatic conversion during diabetic and dietary ketosis. *Cell Chemical Biology, 24*(8), 935–943.e7. https://doi.org/10.1016/j.chembiol.20 17.07.012

Sánchez-Villegas, A., Ruíz-Canela, M., Geak A., Lahortiga, L., & Martínez-Gonz, M. A. (2016). The association between the Mediterranean lifestyle and depression. *Clinical Psychological Science, 4*(6), 1085-1093. https://doi.org/10.1177%2F2167702616638651

Sarker, M. R., & Franks, S. F. (2018). Efficacy of curcumin for age-associated cognitive decline: a narrative review of preclinical and clinical studies. *GeroScience*, *40*(2), 73–95. https://doi.org/10.1007/s11357-018-0017-z

Savage, K., Firth, J., Stough, C., & Sarris, J. (2018). GABA-modulating phytomedicines for anxiety: A systematic review of preclinical and clinical evidence. *Phytotherapy Research, 32*(1) 3-18. https://doi.org/10.1002/ptr.59 40

Sawada, D., Kawai, T., Nishida, K., Kuwano, Y., Fujiwara, S., & Rokutan, K. (2017). Daily intake of *Lactobacillus gasseri* CP2305 improves mental, physical and sleep quality among Japanese medical students enrolled in a cadaver dissection course. *Journal of Functional Foods, 31*, 188–197. https://doi.org/10.1016/j.jff.2017.01.042.

Schulkin, J., Gold, P. W., & McEwen, B. S. (1998). Induction of corticotropin-releasing hormone gene expression by glucocorticoids: Implications for understanding the states of fear and anxiety and allostatic load. *Psychoneuroendocrinology, 23*(3), 219–243. https://doi.org/10.1016/s0306-4530(97)00099-1

Schumacher, B., Pothof, J., Vijg, J. & Hoeijmakers (2021). The central role of DNA damage in the ageing process. *Nature, 592*(7856), 695–703. https://doi.org/10.1038/s41586-021-03307-7

Schwarz, C., Horn, N., Benson, G., Calzado, I. W., Wurdack, K., Pechlaner, R., Grittner, U., Wirth, M., & Flöel, A. (2020). Spermidine intake is associated with cortical thickness and hippocampal volume in older adults. *Neuroimage, 221*, 117132. https://doi.org/10.1016/j.neuroimage.2020.117132

Shafie, A., Rahimi, A. M., Ahmadi, I., Nabavizadeh, F., Ranjbaran, M., & Ashabi, G. (2020). High-protein and low-calorie diets improved the anti-aging Klotho protein in the rats' brain: the toxic role of high-fat diet. *Nutrition & Metabolism*, *17*, Article 86. https://doi.org/10.1186/s12986-020-00508-1

Shalev, I., Entringer, S., Wadhwa, P. D., Wolkowitz, O. M., Puterman, E., Lin, J., & Epel, E. S. (2013). Stress and telomere biology: A life span perspective. *Psychoneuroendocrinology, 38* (9), 1835–1842. https://doi.org/10.1016/j.psyneuen.2013.03.010

Sherwin, B. B. & Henry, J. F. (2008). Brain aging modulates the neuroprotective effects of estrogen on selective aspects of cognition in women: A critical review. *Frontiers of Neuroendocrinology, 29* (1), 88–113. https://doi.org/10.1016/j.yfrne.2007.08.002

Shi, L., Brunius, C., Johansson, I., Bergdahl, I. A., Rolandsson, O., Guelpen, B., Winkvist, A., Hanhineva, K., & Landberg R. (2019). Plasma metabolite biomarkers of boiled and filtered coffee intake and their association with type 2 diabetes risk**.** *Journal of Internal Medicine*, *287*(4), 405–421. https://doi.org/10.1111/joim.13009

Shi, Z., Li, M., Wang, Y., Liu J., & El-Obeid, T. (2019). High iron intake is associated with poor cognition among Chinese old adults and varied by weight status—a 15-y longitudinal study in 4852 adults. *The American Journal of Clinical Nutrition, 109*(1), 109–116. https://doi.org/10.1093/ajcn/nqy254

Shishtar, E., Rogers, G. T., Blumberg, J. B., Au, R., & Jacques, P. F. (2020). Long-term dietary flavonoid intake and risk of Alzheimer disease and related dementias in the Framingham Offspring Cohort. *The American Journal of Clinical Nutrition, 112*(2), 343–353. https://doi.org/10.1093/ajcn/nqaa079

Shively, C. A., Appta, S. E., Chenb, H., Dayc, S. M., Fryea, B. M., Shaltoutd, H. A., Silverstein-Metzlera, M. G., Snyder-Macklere, N., Ubersedera, B., Vitolinsf, M. Z., & Registera, R. C. (2020). Mediterranean diet, stress resilience, and aging in nonhuman primates. *Neurobiology of Stress, 13*, 100254. https://doi.org/10.1016/j.ynstr.2020.100254

Singh, B., Parsaik, A. K., Mielke, M. M., Erwin, P. J., Knopman, D. S., Petersen, R. C., & Roberts, R. O. (2014). Association of Mediterranean diet with mild cognitive impairment and Alzheimer's disease: A systematic review and meta-analysis. *Journal of Alzheimer's Disease, 39*(2): 271-282. https://doi.org/10.3233/JAD-130830

Skvarc, D. R., Dean, O. M., Byrne, L. K., Gray, L., Lane, S., Lewis, M., Fernandes, B. S., Berk, M., & Marriott, A. (2017). The effect of N-acetylcysteine (NAC) on human cognition – A systematic review. *Neuroscience and Biobehavioral Reviews, 78*, 44-56. https://doi.org/10.1016/j.neubiorev.2017.04.013

Slutsky, I., Abumaria, N., Wu, L.-J., Huang, C., Zhang, L., Li, B., Zhao, X., Govindarajan, A., Zhao, M-G., Zhuo, M., Tonegawa, S., & Liu, G. (2010). Enhancement of learning and memory by elevating brain magnesium. *Neuron, 65*(2), 165–177. https://doi.org/10.1016/j.neuron.2009.12.026

Small, G. W., Siddarth, P., Li, Z., Miller, K. J., Ercoli, L., Emerson, N. D., Martinez, J., Wong, K. P., Liu, J., Merrill, D. A., Chen, S. T., Henning, S. M., Satyamurthy, N., Huang, S. C., Heber, D., & Barrio, J. R. (2017). Memory and brain amyloid and tau effects of a bioavailable form of curcumin in non-demented adults: A double-blind, placebo-controlled 18-month trial. *American Journal of Geriatric Psychiatry. 26*(3), 266-277. https://doi.org/10.1016/j.jagp.2017.10.010

Smith, A. D., Smith, S. M., de Jager, C. A., Whitbread, P., Johnston, C., Agacinski, G., Oulhaj, A., Bradley, K. M., Jacoby, R., & Refsum, H. (2010). Homocysteine-lowering by B vitamins slows the rate of accelerated brain atrophy in mild cognitive impairment: a randomized controlled trial. *PLoS One, 5*(9):e12244. https://doi.org/10.1371/journal.pone.0012244. PMID: 20838622; PMCID: PMC2935890.

Smith, A. D., & Refsum, H. (2021). Homocysteine - from disease biomarker to disease prevention. *Journal of Internal Medicine, 290*(4) 826-854. https://doi.org/:10.1111/joim.13279

Smith, L. K., & Wissel, E. F. (2019). Microbes and the mind: How bacteria shape affect, neurological processes, cognition, social relationships, development, and pathology. *Perspectives on Psychological Science 14*(3), 397–418. https://doi.org/10.1177/1745691618809379

Sobesky, J. L., Barrientos, R. M., De May, H. S., Thompson, B. M., Weber, M. D., Watkins, L. R., & Maier, S. F. (2014). High-fat diet consumption disrupts memory and primes elevations in hippocampal IL-1β, an effect that can be prevented with dietary reversal or IL-1 receptor antagonism. *Brain, behavior, and immunity*, *42*, 22–32. https://doi.org/10.1016/j.bbi.2014.06.017

Socci, V., Tempesta, D., Desideri, G., DeGennaro, L., & Ferrara, M., (2017). Enhancing human cognition with cocoa flavonoids. *Frontiers in Nutrition, 4,* 19. https://doi.org/10.3389/fnut2017.00019

Sodhi, K., Pratt, R., Wang, X., Lakhani, H. V., Pillai, S. S., Zehra, M., Wang, J., Grover, L., Henderson, B., Denvir, J., Liu, J., Pierre, S., Nelson, T., & Shapiro, J. I. (2021). Role of adipocyte Na,K-ATPase oxidant amplification loop in cognitive decline and neurodegeneration. *iScience, 24*(11), 103262. https://doi.org/10.1016/j.isci.2021.103262

Solfrizzi, V., Custodero, C., Lozupone, M., Imbimbo, B. P., Valiani, V., Agosti, P., Schilardi, A., D'Introno, A., La Montagna, M., Calvani, M., Guerra, V., Sardone, R., Abbrescia, D. I., Bellomo, A., Greco, A., Daniele, A., Seripa, D., Logroscino, G., Sabbá, C., & Panza, F. (2017). Relationships of dietary patterns, foods, and micro- and macronutrients with Alzheimer's disease and late-life cognitive disorders: A Systematic Review. *Journal of Alzheimer's Disease, 59*(3), 815-849. https://doi.org/10.3233/JAD-170248

Springmann, M., Spajic, L., Clark, M. A., Poore, J., Herforth, A., Webb, P., Rayner, M., & Scarborough, P. (2020). The healthiness and sustainability of national and global food based dietary guidelines: modeling study. *British Medical Journal, (Clinical research ed.), 370,* m2322. https://doi.org/10.1136/bmj.m2322

Squitti, R., Pal, A., Picozza, M., Avan, A., Ventriglia, M., Rongioletti, M. C., & Hoogenraad, T. (2020). Zinc therapy in early Alzheimer's disease: Safety and potential therapeutic efficacy. *Biomolecules*, *10*(8), 1164. https://doi.org/10.3390/biom10081164

Steiner, J. L., Murphy, E. A., McClellan, J. L., Carmichael, M D., & Davis J. M. (2011). Exercise training increases mitochondria biogenesis in the brain. *Journal of Applied Physiology, 111*(4), 1066–1071. https://doi.org/10.1152/japplphysiol.00343.2011

Strandwitz, P., Kim, K. H., Terekhova, D., Liu, J. K., Sharma, A., Levering, J., McDonald, D., Dietrich, D., Ramadhar, T. R., Lekbua, A., Mroue, N., Liston, C., Stewart, E. J., Dubin, M. J., Zengler, K., Knight, R., Gilbert, J. A., Clardy, J., & Lewis, K. (2019). GABA-modulating bacteria of the human gut microbiota. *Nature Microbiolism, 4*(3), 396–403. https://doi.org/10.1038/s41564-018-0307-3

Stringham, N. T., Holmes, P. V., & Stringham, J. M. (2016). Lutein supplementation increases serum brain-derived neurotropic factor (BDNF) in humans. *The FASEB Journal, 30*(S1), 689.3-689.3. https://doi.org/10.1096/fasebj.30.1_supplement.689.3

Sun, N., Youle, R. J., & Finkel, T. (2016). The mitochondrial basis of aging. *Molecular Cell, 61*(5), 654-666. https://doi.org/10.1016/j.molcel.2016.01.028

Tadokoro, K., Ohta, Y., Inufusa, H., Loon, A. F. N., & Abe, K. (2020). Prevention of cognitive decline in Alzheimer's disease by novel antioxidative

supplements. *International Journal of Molecular Sciences. 21*(6), 1974. https://doi.org/10.3390/ijms21061974

Tan, S., Yu, C. Y., Sim, Z. W., Low, Z. S., Lee, B., See, F., Min, N., Gautam, A., Chu, J. J. H., Ng, K. W., & Wong, E. (2019). Pomegranate activates TFEB to promote autophagy-lysomal fitness and mitophagy. *Scientific Reports, 9*(1), 727. https://doi.org/10.1038s41598-018-37400-1

Teruya, T., Chen, Y-J., Kondoh, H., Fukuji, Y., & Yanagida, M. (2021). Whole-blood metabolomics of dementia patients reveal classes of disease-linked metabolites. *Proceedings of the National Academy of Sciences, 118*(37) e2022857118. https://doi.org/10.1073/pnas.2022857118

Thompson, S., Bailey, M., Taylor, A., Kaczmarek, J., Mysonhimer, A., Edwards, C., Reeser, G., Burd, N., Khan, N., & Holscher, H. (2021). Avocado consumption alters gastrointestinal bacteria abundance and microbial metabolite concentrations among adults with overweight or obesity: a randomized controlled trial. *The Journal of Nutrition*, *151*(4), 753–762. https://doi.org/10.1093/jn/nxaa219

Timmers, P. R. H. J., Wilson, J. F., Joshi, P. K., & Deelen, J. (2020). Multivariate genomic scan implicates novel loci and haem metabolism in human aging. *Nature Communications, 11*(1), 3570. https://doi.org/10.1038/s41467-202-17312-3

Topiwala, A., Allan, C. L., Valkanova, V., Zsoldos, E., Filippini, N., Sexton, C. E., Mahmood, A., Fooks, P., Singh-Manoux, A., Mackay, C. E., Kivimaki, M., & Ebmeier, K. P. (2017). Moderate alcohol consumption as risk factor for adverse brain outcomes and cognitive decline: longitudinal cohort study. *British Medical Journal, 357*, j2353. https://doi.org/10.1136/bmj.j2353

Tranter, L. J. & Koutstaal, W. (2008). Age and flexible thinking: An experimental demonstration of the beneficial effects of increased cognitively stimulating activity on fluid intelligence in healthy older adults. *Aging, Neuropsychology, and Cognition, 15*(2), 184–207. https://doi.org/10.1080/13825580701322163

Tsao, C. W., Aday, A. W., Almarzooq, Z. I., Alonso, A., Beaton, A. Z., Bittencourt, M. S., Boehme, A. K., Buxton, A. E., Carson, A. P., Commodore-Mensah, Y., Elkind, M., Evenson, K. R., Eze-Nliam, C., Ferguson, J. F., Generoso, G., Ho, J. E., Kalani, R., Khan, S. S., Kissela, B. M., Knutson, K. L., … Martin, S. S. (2022). Heart disease and stroke statistics-2022 update: A report from the American Heart Association. *Circulation*, *145*(8), e153–e639. https://doi.org/10.1161/CIR.0000000000001052

Tsolaki, M., Lazarou, E., Kozori, M., Petridou, N., Tabakis, I., Lazarou, I., Karakota, M., Saoulidis, I., Melliou, E., & Magiatis, P. (2020). A randomized clinical trial of Greek high phenolic early harvest extra virgin olive oil in mild cognitive impairment: The MICOIL pilot study. *Journal of Alzheimer's Disease*, *78*(2), 801–817. https://doi.org/10.3233/JAD-200405

Tucker, L. A. (2017). Caffeine consumption and telomere length in men and women of the National Health and Nutrition Examination Survey (NHANES). *Nutrition and Metabolism, 14,* Article 10. https://doi.org/10.1186/s12986-017-0162-x

Tverdal, A., Selmer, R., Cohen, J. M., & Thelle, D. S., (2020). Coffee consumption and mortality from cardiovascular diseases and total mortality. Does the

brewing method matter? *European Journal of Preventive Cardiology*, *27*(18), 1986–1993. https://doi.org/10.1177/2047487320914443

Valenzuela, M., & Sachdev, P. (2009). Can cognitive exercise prevent the onset of dementia? Systematic review of randomized clinical trials with longitudinal follow-up. *American Journal of Geriatric Psychiatry, 17*(3), 179–187. https://doi.org/10.1097/JGP.0b013e3181953b57

Valls-Pedret, C., Sala-Vila, A., Serra-Mir, M., Corella, D., de la Torre, R., Martinez-Gonzalez, M. A., Martinez-Lapiscina, E. H., Fito, M., Perez-Heras, A., Salas-Salvado, J., Estruch, R., & Ros, E. (2015). Mediterranean diet and age-related cognitive decline: A randomized clinical trial. *Journal of the American Medical Association, Internal Medicine, 175*(7), 1094–1103. https://doi.org/10.1001/jamainternmed.2015.1668

Velazquez, R., Ferreira1, E., Knowles, S., Fux, C., Rodin, A., Winslow, W., & Oddo, S. (2019). Lifelong choline supplementation ameliorates Alzheimer's disease pathology and associated cognitive deficits by attenuating microglia activation. *Aging Cell, 18*(6), e13037. https://doi.org/10.1111/acel.13037

Vercambre, M-N., Berr, C., Ritchie, K., & Kang, J. H. (2013). Caffeine and cognitive decline in elderly women at high vascular risk. *Journal of Alzheimer's Disease, 35*(2), 413-421. https://doi.org/10.3233/JAD-122371

Vijay, A., Kouraki, A., Gohir, S., Turnbull, J., Kelly, A., Chapman, V., Barrett, D. A., Bulsiewicz, W. J., & Valdes, A. M. (2021). The anti-inflammatory effect of bacterial short chain fatty acids is partially mediated by endocannabinoids**.** *Gut Microbes*, *13*(1), 1997559. https://doi.org/10.1080/19490976.2021.1997559

Vinciguerra, F., Graziano, M., Hagnäs, M., Frittitta, L., & Tumminia, A. (2020). Influence of the Mediterranean and ketogenic diets on cognitive status and decline: A narrative review. *Nutrients*, *12*(4), 1019. https://doi.org/10.3390/nu12041019

Vitiello, M. V., Moe, K. E., Merriam, G. R., Mazzoni, G., Buchner, D. H., & Schwartz, R. S. (2006). Growth hormone releasing hormone improves the cognition of healthy older adults. *Neurobiology of Aging, 27*(2), 318–323. https://doi.org/10.1016/j.neurobiolaging.2005.01.010

von Krause, M., Radev, S. T., & Voss, A. (2022). Mental speed is high until age 60 as revealed by analysis of over a million participants. *Nature human behaviour*, 10.1038/s41562-021-01282-7. Advance online publication. https://doi.org/10.1038/s41562-021-01282-7

Voulgaropoulou, S. D., van Amelsvoort, T. A. M. J., Prickaerts, J., & Vingerhoets, C. (2019). The effect of curcumin on cognition in Alzheimer's disease and healthy aging: A systematic review of pre-clinical and clinical studies. *Brain Research, 1725*, 146476. https://doi.org/10.1016/j.brainres.2019.146476

Wade, A. T., Davis, C. R., Dyer, K. A., Hodgson, J. M., Woodman, R. J., Hannah A. D., Keage, H. A. D., & Murphy, K. J. (2019). A Mediterranean diet with fresh, lean pork improves processing speed and mood: Cognitive findings from the MedPork Randomised Controlled Trial**.** *Nutrients*, *11*(7), 1521. https://doi.org/10.3390/nu11071521

Waldstein, S. R., Rice, S. C., Thayer, J. F., Najjar, S. S., Scuteri, A., & Zonderman, A. B. (2008). Pulse pressure and pulse wave velocity are related to cognitive

decline in the Baltimore Longitudinal Study of Aging. *Hypertension, 51*(1), 99–104. https://doi.org/10.1161/HYPERTENSIONAHA. 107.093674

Walker, J. M., Klakotskaia, D., Ajit, D., Weisman, G. A., Wood, W. G., Sun, G. Y., Serfozo, P., Simonyi, A., & Schachtman, T. R. (2015). Beneficial effects of dietary EGCG and voluntary exercise on behavior in an Alzheimer's disease mouse model. *Journal of Alzheimer's Disease, 44*(2), 561–572. https://doi.org/10.3233/JAD-140981

Wallenstein, G. (2003). *Mind, stress, & emotion: The new science of mood.* Commonwealth Press.

Wang, D. D., Li, Y., Chiuve, S. E., Stampfer, M. J., Masnson, J. E., Rimm, E. B., Willett, W. C., & Hu, F. B. (2016). Specific dietary fats in relation to total and cause-specific mortality. *Journal of the American Medical Association, Internal Medicine*, *176*(8), 1134–1145. https://doi.org/10.1001/jamainternmed.2016.2417

Wang, J., Ho, L., Zhao, Z., Seror, I., Humala, N., Dickstein, D. L., Thiuyagarajan, M., Percival, S. S., Talcott, S. T., & Pasinetti, G. M. (2006). Moderate consumption of Cabernet Sauvignon attenuates Abeta neuropathology in a mouse model of Alzheimer's disease. *Federation of American Society for Experimental Biology*. *20*(13), 2313-2320. https://doi.org/10.1096/fj.06-6281com

Wang, J., Um, P., Dickerman, B. A., & Liu, J. (2018). Zinc, magnesium, selenium and depression: A review of the evidence, potential mechanisms and implications. *Nutrients, 10*(5), 584. https://doi.org/10.3390/nu10050584

Wang, Z., Zhu, W., Xing, Y., Jia, J., & Tang, Y. (2021). B vitamins and prevention of cognitive decline and incident dementia: A systematic review and meta-analysis. *Nutrition Reviews*, *80*(4), 931–949. https://doi.org/10.1093/nutrit/nuab057

Ward, M. B., Scheitler, A., Yu, M., Senft, L., Zillmann, A. S., Gorden, J. D., Schwartz, D. D., Ivanović-Burmazović, Y., & Goldsmith, C. R. (2018). Superoxide dismutase activity enabled by a redox-active ligand rather than metal. *Nature Chemistry, 10*(12), 1207-1212. https://doi.org/10.1038/s41557-018-0137-1

Wessels, I., Maywald, M., & Rink, L. (2017). Zinc as a gatekeeper of immune function. *Nutrients, 9*(12), 1286. https://doi.org/10.3390/nu9121286

Wilson, K. A., Chamoli, M., Hilsabeck, T. A., Pandey, M., Bansal, S., Chawla, G., & Kapahi, P. (2021). Evaluating the beneficial effects of dietary restrictions: A framework for precision nutrigeroscience. *Cell Metabolism*, *33*(11), 2142-2173. https://doi.org/10.1016/j.cmet.2021.08.018

Wilson, R. S., Boyle, P. A., Yu, L., Barnes, L. I., Schneider, J. A., & Bennett, D. A. (2013). Life-span cognitive activity, neuropathologic burden, and cognitive aging. *Neurology, 81*(4), 314–321. https://doi.org/10.1212/WNL.0b013e31829c5e8a

Wirth, M., Benson, G., Schwarz, C., Köbe, T., Grittner, U., Schmitz, D., Sigrist, S. J., Bohlken, J., Stekovic, S., Madeo, F., & Flöel, A. (2018). The effect of spermidine on memory performance in older adults at risk for dementia: A randomized controlled trial. *Cortex, 109*, 181-188. https://doi.org/10.1016/j.cortex.2018.09.014

Witte, A. V., Fobker, M., Gellner, R., Knecht, S., & Flöel, A. (2009). Caloric restriction improves memory in elderly humans. *Proceedings of the National Academy of Sciences of the United States of America, 106*(4), 1255-1260. https://doi.org/10.1073/pnas.0808587106

Wood, A. M., Kaptoge, S., Butterworth, A. S., Willeit, P., Warnakula, S., Bolton, T., Paige, E., Paul, D. S., Sweeting, M., Burgess, S., Bell, S., Astle, W., Stevens, D., Koulman, A., Selmer, R. M., Verschuren, W. M. M., Sato, S., Njølstad, I., Woodward, M., … Emerging Risk Factors Collaboration/EPIC-CVD/UK Biobank Alcohol Study Group. (2018). Risk thresholds for alcohol consumption: Combined analysis of individual-participant data for 599 912 current drinkers in 83 prospective studies. *The Lancet, 391*(10129), 1513–1523. https://doi.org/10.1016/S0140-6736(18)30134-X

Wu, P-Y, Chen, K. M. & Belcastro, F. (2020). Dietary patterns and depression risk in older adults: Systematic review and meta-analysis. *Nutrition Reviews*, *79*(9), 976–987. https://doi.org/10.1093/nutrit/nuaa118

Wu, Y., Zhang, L., Li, S., & Zhang, D. (2022). Associations of dietary vitamin B1, vitamin B2, vitamin B6, and vitamin B12 with the risk of depression: A systematic review and meta-analysis. *Nutrition Reviews*, *80*(3), 351–366. https://doi.org/10.1093/nutrit/nuab014

Xie, L., Kang, H., Xu, Q., Chen, M. J., Liao, Y., Thiyagarajan, M., O'Donnell, J., Christensen, D. J., Nicholson, C., Iliff, J. J., Takano, T., Deane, R., & Nedergaard, M. (2013). Sleep drives metabolite clearance from the adult brain. *Science, 342*(6156), 373–377. https://doi.org/10.1126/science.1241224

Yamagishi, K., Maruyama, K., Ikeda, A., Nagao, M., Noda, H., Umesawa, M., Hayama-Terada, M., Muraki, I., Okada, C., Tanaka, M., Kishida, R., Kihara, T., Ohira, T., Imano, H., Brunner, E. J., Sankai, T., Okada, T., Tanigawa, T., Kitamura, A., Kiyama, M., … Iso, H. (2022). Dietary fiber intake and risk of incident disabling dementia: the Circulatory Risk in Communities Study. *Nutritional Neuroscience*, 1–8. Advance online publication. https://doi.org/10.1080/1028415X.2022.2027592

Ylilauri, M. P. T., Voutilainen, S., Lonnroos, E., Virtanen, H. E. K., Tuomainen, T.-P., Salonen, J. T., & Virtanen, J. K. (2019). Associations of dietary choline intake with risk of incident dementia and with cognitive performance: The Kuopio Ischaemic Heart Disease Risk Factor study. *The American Journal of Clinical Nutrition, 110*(6)*, 1416-1423*. https://doi.org/10.1093/ajcn/nqz148

Yu, J.-Z., Wang, J., Sheridan, S. D., Perlis, R. H., & Rasenick, M. M. (2020). N-3 polyunsaturated fatty acids promote astrocyte differentiation and neurotrophin production independent of cAMP in patient-derived neural stem cells. *Molecular Psychiatry, 26*(9), 4605–4615. https://doi.org/10.1038/s41380-020-0786-56-5

Yulug, B., Kilic, E., Altunay, S., Ersavas, C., Orhan, C., Dalay, A., Tuzcu, M., Sahin, N., Juturu, V., & Sahin, K. (2018). Cinnamon polyphenol extract exerts neuroprotective activity in traumatic brain injury in male mice. *CNS & Neurological Disorders - Drug Targets (Formerly Current Drug Targets - CNS & Neurological Disorders), 17*(6), 439-447. https://doi.org/10.2174/1871527317666180501110918

Zamroziewicz, M. K., Paul, E. J., Zwilling, C. E., Johnson, E. J., Kuchan, M. J., Cohen, N. J., & Barbey, A. K. (2016). Parahippocampal cortex mediates the

relationship between lutein and crystallized intelligence in healthy, older adults. *Frontiers in Aging Neuroscience*, *8*, 297. https://doi.org/10.3389/fnagi.2016.00297

Zamroziewicz, M. K., Taludar, M. T., Zwilling, C. E., & Barbey, A. K. (2017). Nutritional status, brain network organization, and general intelligence. *Neuroimage, 161*, 241-250. https://doi.org/10.1016/j.neuroimage.2017.08.043

Zapata, F. J., Rebollo-Hernanz, M., Novakofski, J. E., Nakamura, M. T., & de Mejia, E. G., (2019). Caffeine, but not other phytochemicals in mate tea (Ilex paraguariensis St. Hilaire) attenuates high-fat-high-sucrose-diet-driven lipogenesis and body fat accumulation. *Journal of Functional Foods*, *64*, 103646. https://doi.org/10.1016/j.jff.2019.103646

Zhang, B., Wang, H. E., Bai, Y. M., Tsai, S. J., Su, T. P., Chen, T. J., Wang, Y. P., & Chen**,** M. H. (2021). Inflammatory bowel disease is associated with higher dementia risk: A nationwide longitudinal study. *Gut, 70*(1), 85-91. https://doi.org/10.1136/gutjnl-2020-320789

Zhang, L., Reyes, A., & Wang, X. (2018). The role of mitochondria-targeted antioxidant MitoQ in neurodegenerative disease. *Molecular and Cellular Therapies*, *6*(1), 1887-1899. https://doi.org/10.26781/2052-8426-2018-01

Zhang, R., Shen, L., Miles, T., Shen, Y., Cordero, J., Qi, Y., Liang, L., & Li, C. (2020). Association of low to moderate alcohol drinking with cognitive functions from middle to older age among US adults. *Journal of the American Medical Association Network Open 3*(6), e207922. https://doi.org/10.1001/jamanetworkopen.2020.7922

Zhang, Y., Yang, H., Li, S., Li, W.-D., & Wang, Y. (2021). Consumption of coffee and tea and risk of developing stroke, dementia, and post stroke dementia: A cohort study in the UK Biobank. *PLoS Medicine, 18*(11), e1003830. https://doi.org/10.1371/journal.pmed.1003830

Zhao, J., Blayney, A., Liu, X., Gandy, L., Jin, W., Yan, L., Ha. J.-H., Canning, A. J., Connelly, M., Yang, C., Liu, X., Xiao, Y., Cosgrove, M. S., Solmaz, S. R., Zhang, Y., Ban, D., Chen, J., Loh, S. N., & Wang, C. (2021). EGCG binds intrinsically disordered N-terminal domain of p53 and disrupts p53-MDM2 interaction. *Nature Communications, 12*, Article 986. https://doi.org/10.1038/s41467-021-21258-5

Zhou, A., Taylor, A. E., Karhunan, V., Zhan, Y., Rovio, S. P., Lahti, J., Sjögren, P., Byberg, L., Lyall, D. M., Auvinen, J., Lehtimäki, T., Kähönen, M., Hurti-Kähönen, N., Perälä, M. M., Michaëlsson, K., Mahajan, A., Lind, L., Power, C., Eriksson, J. G., … Hyppönen, E. (2018). Habitual coffee consumption and cognitive function: A Mendelian randomization meta-analysis in up to 415,530 participants. *Scientific Reports*, *8*(1), 7526. https://doi.org/10.1038/s41598-018-25919-2

Zhu, L.-N., Mei, X., Zhang, Z.-G., Xie, Y.-P., & Lang, F. (2018). Curcumin intervention for cognitive function in different types of peoples: A systematic review and meta-analysis. *Phytotherapy Research, 33*(3), 524-533. https://doi.org/10.1002/ptr.6257

Ziegler, D. A., Piguet, O., Salat, D. H., Prince, K., Connally, E., & Corkin, S. (2010). Cognition in healthy aging is related to regional white matter integrity, but not cortical thickness. *Neurobiology of Aging, 31*(11), 1912–1926. https://doi.org/10.1016/j.neurobiolaging.2008.10.015

Zoladz, J. A., Pilc, A., Majerczak, J., Grandys, M., Zapart-Bukowska, J., & Duda, K. (2008). Endurance training increases plasma brain-derived neurotrophic factor concentration in young healthy men. *Journal of Physiology and Pharmacology, 59, Suppl 7*, 119–132.

Zwilling, C. E., Strang, A., Anderson, E., Jurcsisn, J., Johnson, E., Das, T., Kuchan, M. J., & Barbey, A. K. (2021). Enhanced physical and cognitive performance in active duty airmen: Evidence from a randomized multimodal physical fitness and nutritional intervention**.** *Scientific Reports, 11*(1), 3820. https://doi.org/10.1038/s41598-021-81800-9

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