

Micronutrients and Anti-Aging



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Decline in digestive capacity (HCl and bile) reduces availability of nutrients, especially those that are protein-bound.

Without adequate digestive capacity, protein-bound nutrients can not be liberated and are not available for absorption. This is a primary reason for extra- or intercellular deficiency.¹

Nutrients affected by reduced digestive capacity may include:

B12, Folate, Iron, Calcium, Magnesium, Potassium, Zinc

Inadequate intake of nutrients as age progresses

The elderly naturally consume less nutrient dense foods as metabolism slows, they experience suppressed HCl in the stomach, they may have dental or oropharyngeal problems that prevent adequate chewing and swallowing of foods like protein and fibrous foods, reduced fluid/electrolyte regulation, as well as greater prevalence of chronic disease.²

Typical nutrient deficiencies seen in aging populations include:

Vitamin B6, Folate, Vitamin B12, Vitamin C, Vitamin D, Vitamin E, Calcium, Magnesium, Iron, Zinc, Protein, Omega-3 fatty acids

Bioaccumulation of Toxins

With age, comes longer exposure to naturally occurring and man-made toxic elements, which can bioaccumulate and slow down natural detoxification processes, further exacerbating the body's ability to excrete toxins. This buildup happens almost in a compounding manner as one continues to age and continues to experience declining detox capacity.^{3,4,5}

Toxic accumulation of substances is most likely to come from:

Heavy metals, Mold, Industrial byproducts (fertilizer and pesticide residue, PCBs, BPA, etc)

Cumulative lifelong exposure of substances that deplete antioxidants

As one ages, these toxic exposures also deplete or severely impair natural antioxidant capacity such as glutathione, vitamins A, C and E, and minerals. As those mechanisms become depleted, bioaccumulation may occur at a greater rate.¹

Antioxidants affected include:

Glutathione, Vitamin A, Vitamin C, Vitamin E



Changes in Gut Microbiome with Dietary Pattern Changes

As one ages, and changes dietary intake due to changes in habits, availability of food/nutrients, medical need, etc, microbial populations are impacted, which impacts liberation, manufacture, and absorption of certain nutrients.⁶

Bacterial populations affected may include:

Bifidobacterium (decrease), Lactobacillus (decrease), Akkermansia (decrease)
Proteobacteria (increase), Firmicutes:Bacteroidetes ratio (increases)



Cognitive decline is associated with nutrient deficiencies

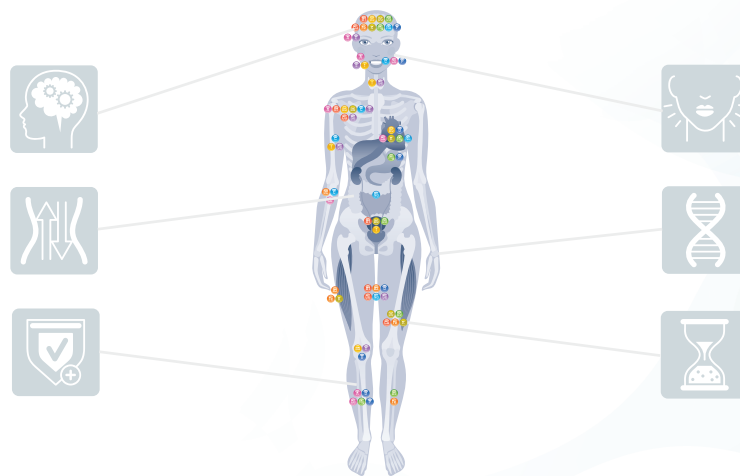
As individuals age, their diet changes, and they accumulate toxins from normal everyday or acute exposures, there may be seen a decline in the following nutrients, which impact myelination, cognitive function, and antioxidant status:^{7,8}

Vitamin A, Vitamin C, Vitamin D, Vitamin E, Choline, Magnesium, Essential fatty acids
B vitamins, Glutathione, Cysteine, Glutamine, Arginine, CoQ10, Zinc

Neurological symptoms are associated with nutrient deficiencies from those above, which can range from cerebellar/gross motor dysfunction, to cognitive impairment/decline, to mood abnormalities, to neuropathy. It is critical for providers to assess patterns of deficiency in the face of nutritional intake and symptomology of the patient in order to determine the most effective interventions for clinical improvement.

Consider a comprehensive assessment with the following Vibrant tests:

- **Micronutrient**
- **Neural Zoomer Plus**
- **Tickborne diseases**
- **Gut Zoomer**
- **Wheat Zoomer**
- **Heavy Metals**



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