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Sustainability Evaluation of Plant-Based Beverages and Semi-Skimmed Milk: More Than Just a Carbon Footprint

Developing a reliable method to compare food sustainability is gaining traction, with efforts like those by the Food and Agriculture Organization (FAO). This research aims to contribute to a comprehensive scientific comparison of food categories based on CO2 emissions linked not to weight but to their primary function: nutrient availability and uptake in the consumer's body. The study utilizes a multi-criteria evaluation for sustainability, incorporating the Nutrient Rich Food (NRF) score, protein digestibility, and essential amino acid content. A case study compares one serving of semi-skimmed milk (SSM) with various plant-based beverages (oat, soy, rice, coconut, and almond), considering their carbon footprints in relation to nutrient content and environmental costs.

The analysis integrates protein quality through essential amino acid proportion and digestibility. Findings reveal that achieving an NRF11.3 score of 50 requires more servings of unfortified plant-based beverages than semi-skimmed milk, resulting in higher carbon footprints, except for soy drink. However, when considering emerging farm management measures, semi-skimmed and soy drinks show comparable carbon footprints for a given NRF score. Fortified plant-based beverages (soy, oat, and almond) exhibit lower footprints relative to the calculated NRF scores. Yet, when converting carbon footprints to euros using the European Union Emissions Trading System and adding them to retail prices per kilogram, semi-skimmed milk emerges as the option with the lowest "societal costs" (environment and consumer costs). The research underscores that understanding a food product's nutritional value requires more than knowledge of its composition; uptake into the body maintenance and potential synergistic effects of other components in the food matrix play crucial roles.

de Jong et al. Sustainability. 2024; 16(5):1919.

New Probiotic Demonstrates its Ability to Reduce Bloating

BV379 is a recently FDA-approved spore-forming strain of *Bacillus velezensis*, selected for its secretion of digestive enzymes, including non-starch polysaccharidases. A randomized, double-blind, placebo-controlled trial evaluated the safety, tolerability, and gastrointestinal (GI) effects of *Bacillus velezensis* BV379 in healthy adults with mild digestive symptoms. Eighty participants consumed either BV379 (2×10^9 CFU/day) or placebo for 8 weeks. A post hoc analysis of a two-symptom composite (bloating/distention and burping) showed a trend toward improvement in the BV379 group ($p=0.087$).

BV379 was well tolerated, with no serious adverse events reported and no clinically meaningful changes in blood chemistry, hematology, insulin, or intestinal permeability. Weekly GI symptom scores and adverse event profiles indicated no safety concerns. Fecal metagenomic analysis showed no disruption to overall microbial diversity, and BV379 was detected in over half of supplemented participants, accompanied by modest enrichment of several commensal bacterial species. These findings support the safety of BV379 and suggest its potential to alleviate abdominal bloating in healthy adults.

Garvey et al. J Am Nutr Assoc. 2025 Sep 30:1-16.

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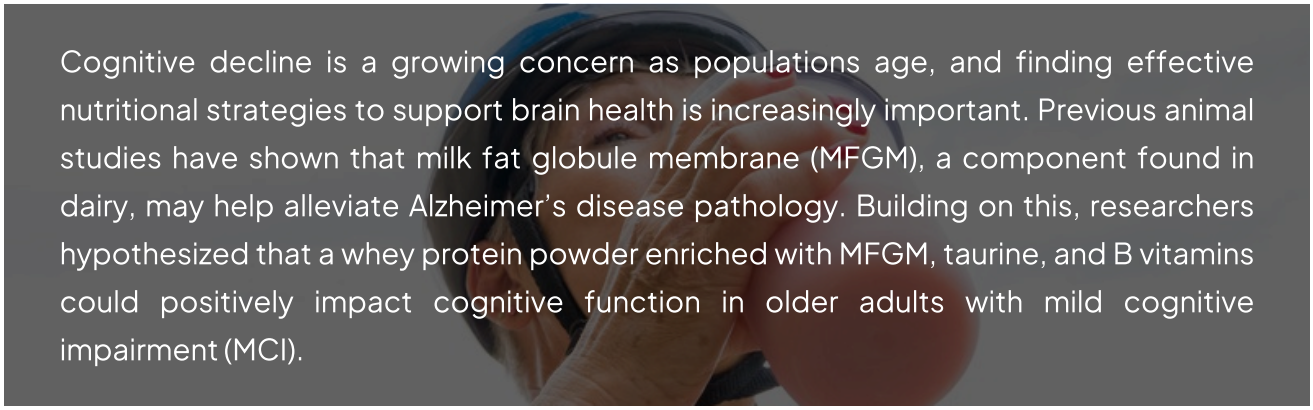
Benefits of Alpha-Lactalbumin on Sleep

Insufficient sleep and the problems associated with it continue to be a growing global problem. Poor sleep is associated with multiple negative health and performance outcomes, both short and long term. The amino acid tryptophan has been reported as a promising sleep-promoting nutrient, with the richest food source of tryptophan, a-lactalbumin, having some promising initial data. To enhance knowledge in the area, the current evidence was systematically reviewed with the aim of clarifying the association between a-lactalbumin and sleep. Four clinical trial databases were searched from database inception to March 2023. Primary research articles were included if they 1. contained α-lactalbumin as an independent variable; 2. Had an outcome measure of sleep or sleepiness; and 3. participants were ≥ 18 years old. Eight studies were reviewed, with half having recruiting athletic populations and the other half involving healthy participants.

Sleep or sleepiness was measured objectively in six studies, with two studies employing polysomnography (which records brain waves, blood oxygen level, heart rate and breathing, as well as eye and leg movements). Four utilized actigraphy (wearable activity tracker) to assess sleep. Across the studies, 20-60g of a-lactalbumin was supplemented, with five studies observing a positive association between -lactalbumin and sleep. Sleep-onset latency (time taken to fall asleep) was the primary sleep metric improved following evening supplementation (within 3.5hrs of bed) of α-lactalbumin, with no studies observing any negative associations with sleep. “Data from this review suggest that individuals that have difficulty initiating sleep may benefit most from pre-sleep α-lactalbumin supplementation.”

Barnard et al. J Sleep Res. 2024 Jan 7:e14141. Epub ahead of print.

Whey Protein Supplementation Enhances Cognitive Function in Older Adults with Mild Cognitive Impairment



Cognitive decline is a growing concern as populations age, and finding effective nutritional strategies to support brain health is increasingly important. Previous animal studies have shown that milk fat globule membrane (MFGM), a component found in dairy, may help alleviate Alzheimer's disease pathology. Building on this, researchers hypothesized that a whey protein powder enriched with MFGM, taurine, and B vitamins could positively impact cognitive function in older adults with mild cognitive impairment (MCI).

To test this, a 12-month randomized controlled trial was conducted with 107 participants, aged approximately 63 years, who were randomly assigned to either an intervention group receiving 15g of whey protein powder daily or a placebo group receiving an identical-looking supplement without active ingredients. Cognitive function was assessed using the Montreal Cognitive Assessment (MoCA) and other standardized cognitive tests at baseline, 6 months, and 12 months.

The results showed a clear benefit for the whey protein group. After one year, participants who consumed the whey protein supplement experienced a significantly greater improvement in MoCA scores compared to the placebo group, with a mean increase of 3.23 points versus 1.42 points, representing a significant difference between the groups. Additionally, secondary cognitive measures, such as the Digit Symbol Substitution Test, also showed notable enhancements in processing speed and executive function.

Importantly, the supplement was well tolerated, with minimal reported side effects and no significant difference in adverse events between the two groups. These findings suggest that daily supplementation with whey protein powder rich in MFGM, taurine, and B vitamins could be a simple and effective dietary strategy to support cognitive function and potentially slow cognitive decline in older adults with MCI. Further research could help determine the long-term benefits and optimal dosages for cognitive health interventions.

Li et al. Am J Clin Nutr. 2025 Feb;121(2):256-264.

Lactoferrin May Slow Brain Aging by Targeting Inflammation, Oxidative Stress, and the Gut-Brain Axis

Lactoferrin (LF), a natural protein with antioxidant and anti-inflammatory properties, is showing promise in the fight against brain aging. While it's already known for its role in reducing oxidative stress and inflammation in the body, this study explored whether LF could also protect the brain from age-related decline.

Researchers tested low, medium, and high doses of LF in a mouse model of brain aging caused by D-galactose. Mice receiving medium (500 mg/kg) and high (2000 mg/kg) doses of LF showed improved body weight, mobility, and memory performance. They also had reduced damage in both the brain's hippocampus—a key area for memory—and the intestinal lining. LF boosted the brain and blood levels of key antioxidant enzymes and reduced inflammation markers in both the colon and bloodstream. It also helped restore cellular recycling systems (autophagy) by influencing the PI3K/Akt/mTOR pathway, which plays a major role in aging and brain health.

Interestingly, LF also had positive effects on gut health, improving the balance of gut bacteria and increasing beneficial short-chain fatty acids—important compounds that help maintain a healthy gut-brain connection.

Overall, the highest dose had the most noticeable anti-aging effects, but the medium dose (500 mg/kg/day) appeared to offer a balance between effectiveness and cost. These findings suggest that lactoferrin could support brain health during aging by reducing inflammation, improving gut health, and enhancing the body's natural cellular repair systems.

Wang et al. Int J Biol Macromol. 2025 Apr 12;309(Pt 4):143033.

Rethinking Lactose: Why Milk's Sugar Deserves a Comeback

A "healthy sugar" might sound like a contradiction—but lactose, the natural sugar in milk, is starting to challenge that idea. Long viewed as a digestive problem for many adults, lactose is gaining attention for its potential benefits to gut health, blood sugar control, and even bone strength.

Lactose evolved as a unique feature of mammalian milk, formed by joining glucose and galactose. This structure allowed milk to carry more energy with less osmotic pressure, while also offering protection from microbial overgrowth by limiting the types of bacteria that could digest it. Though many adults lose the ability to produce lactase, the enzyme needed to digest lactose, research shows most can still tolerate up to 12 grams per day—about one glass of milk—without symptoms. More surprisingly, small, regular doses may help reshape the gut microbiome, encouraging bacteria that digest lactose without causing gas or bloating, and supporting the production of short-chain fatty acids that reduce inflammation and improve gut function.

These prebiotic effects are especially notable in lactose non-persistent (LNP) individuals, but may also benefit those who do produce lactase. Because lactose digests more slowly than simple sugars, it has a glycemic index of just 46—less than half that of glucose—offering better blood sugar control and longer-lasting energy. It also appears to reduce levels of ghrelin, the hunger hormone, which may help support appetite regulation and weight management.

There's evidence lactose may also aid calcium absorption, either by lowering intestinal pH or by shifting the microbiome in ways that enhance mineral uptake—particularly important for aging adults at risk of calcium loss. While results are mixed on whether this effect extends beyond infancy, the potential benefits warrant further investigation.

With the rise of plant-based milks and carb-conscious diets, it's important to recognize that not all sugars are created equal. Unlike added sugars, which can disrupt the gut and spike blood glucose, lactose may actually protect against these effects. For many, especially those with LNP, moderate daily intake could improve tolerance and deliver real nutritional gains. Rather than avoiding lactose altogether, it may be time to welcome it back—with a fresh perspective.

IMGC, 2025 No Need To Sugarcoat It: Lactose Is a Healthy Sugar

Therapeutic Effects of Whey Protein Plus Probiotic in Colitis

Combined supplementation with whey protein (0.2 g per kg body weight) and Lacticaseibacillus rhamnosus GG (8 log CFU/day) was shown to reduce the severity of colitis in a dextran sulfate sodium (DSS)-induced mouse model. C57BL/6J mice were divided into four groups: healthy controls, colitic mice without treatment, colitic mice receiving whey protein alone, and colitic mice receiving both whey protein and the probiotic. Mice given whey protein —either alone or in combination—experienced less weight loss, maintained healthier colon structure, and showed lower disease activity scores. Histological analysis further indicated that the group receiving both whey protein and the probiotic had significantly reduced inflammatory cell infiltration in the colon. Assuming the mouse model reflects aspects of human disease, these results suggest that whey protein, particularly when combined with a probiotic, may help manage colitis symptoms by modulating inflammation and immune responses without relying on pharmaceutical interventions.

Ascanio et al. International Dairy Journal (2025): 106336.