

The Moss Nutrition Digest

Timely Tidbits to Support Your Practice

October, 2024 - #44

Enhanced Toxin Binding with Lactic Acid Probiotics

Binders are substances which adhere to and enable the removal of toxins from the body, preventing them from being reabsorbed in the digestive tract. Different binders may attract different toxins, so choosing the right combination can make a significant impact on outcomes.

Some of the most time honored and well researched binders include substances like activated charcoal, bentonite (montmorillonite) clay, and chlorella. But in recent years, studies also have shown that certain strains of lactic acid bacteria have the ability to bind to environmental and endogenous toxins, facilitating their excretion from the body.

Lactobacilli—probiotic organisms commonly found in the human gut, and in foods such as sauerkraut and yogurt—are well known to aid in restoring gut balance and intestinal integrity. Incorporating probiotic strains with a high affinity for heavy metals and mycotoxins into patient protocols presents a practical approach to mitigating toxicity while simultaneously enhancing gut health.

A paper published in February of 2024 entitled “The Involvement of Lactic Acid Bacteria and Their Exopolysaccharides in the Biosorption and Detoxication of Heavy Metals in the Gut” discusses the superior heavy metal binding ability of lactobacillus organisms which produce exopolysaccharides. Such species include *Lactobacillus rhamnosus*, *lactobacillus casei*, *Lactobacillus plantarum*, and *Lactobacillus reuteri*.

Exopolysaccharides (EPS) are high molecular weight biopolymers composed of sugar residues. EPS are secreted by some, but not all, species and strains of lactic acid bacteria. In addition to binding heavy metals and mycotoxins, EPS are integral to biofilm formation and adhesion, help enhance gut barrier function, and exhibit immune modulatory properties. The mechanisms underlying EPS metal binding appear to be related to negatively charged acidic groups and the unique steric structure on the surface of EPS.

Research published by Teemu et al in 2008 showed that EPS-producing lactic acid probiotics, including *L. plantarum* and *L. rhamnosus*, demonstrated a significant capacity to bind cadmium and lead ions, especially under acidic conditions. These results suggest that if taken with food, such probiotics could promote the capture of metals early in the digestive process, within the low pH environment of the stomach and upper intestine.

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In addition to metals and phthalates, lactic acid bacteria have been shown to effectively bind a number of toxic mold products (mycotoxins). Chief among these is aflatoxin, a globally ubiquitous poison found in contaminated peanuts, coffee, rice, wheat, and other seeds and grains. Several studies suggest that *Lactobacillus casei* is highly effective in binding Aflatoxin B1. A combination of *L. rhamnosus*, *L. plantarum*, and *Saccharomyces boulardii*, a yeast probiotic, was shown to bind Aflatoxin M1 and ochratoxin. Independently, *L. plantarum* also has been shown to bind common Fusarium mycotoxins, notably zearalenone.

Finally, both *L. rhamnosus* and *L. plantarum* have been shown to bind phthalate, a “plasticizer” commonly used to soften polyvinyl chloride (PVC) which has been associated with altered blood sugar metabolism, endocrine disruption, and other health problems.

Emerging research on the role of probiotics in modulating the human microbiome is unveiling new therapeutic potentials, particularly in the area of toxin management. This opens up promising avenues for managing toxin exposure through targeted probiotic supplementation, offering healthcare practitioners novel, non-invasive strategies to support the removal of toxins and overall health of their patients.

REFERENCES

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ProBind Select™ is a comprehensive, all-in-one binder product that facilitates dosing, treatment and compliance for patients dealing with metal and mold toxicity. Along with high quality activated charcoal, bentonite clay, and broken cell wall chlorella, ProBind Select™ includes three researched lactic acid probiotics plus *Saccharomyces boulardii* to provide and enhance direct toxin binding activity. These beneficial probiotics in ProBind Select™ may also help to reduce histamine and MCAS reactivity, balance dysbiosis, and support bowel regularity in patients undergoing supervised detox protocols.