



Biome Iron+™ Probiotic

Mechanism of Action



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Dietary iron

Iron is present in food as heme and non-heme iron. Plant foods contain non-heme iron only, whereas animal foods contain both heme and non-heme iron. Heme iron is more efficiently absorbed than non-heme iron.

Non-heme iron in the gastrointestinal tract is mostly present in the oxidised form, ferric iron (Fe^{3+}). Ferric iron (Fe^{3+}) needs to be reduced to ferrous iron (Fe^{2+}) before it can be transported into the duodenal enterocyte through the transporter DMT-1. Ferric iron can be reduced in the lumen by ascorbic acid (or other reducing agents), or the membrane-spanning reductase duodenal cytochrome B (dctb).

The mechanisms by which *Lactobacillus plantarum* 299v (in Biome Iron+ Probiotic) enhances iron absorption are still being elucidated, but are believed to be via the following mechanisms:

- *Lactobacillus plantarum* species produce a molecule with ferric-reducing activity (p-hydroxy-phenyllactic acid; HPLA). HPLA reduces ferric iron to the more bioavailable ferrous iron
- A recent in study in cell culture generated data suggesting that the effect of *Lactobacillus plantarum* 299v is mediated through the Fe^{3+} /dctb axis, with *Lactobacillus plantarum* 299v increasing the amount of ferric iron (Fe^{3+}) in the intestine available for absorption

In summary, *Lactobacillus plantarum* 299v most likely increases the bioavailability of non-heme iron, enhancing its absorption from the intestine.

REFERENCES

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