

Study: Rapid Healing, Healthful Aging Among Possible Benefits Of L. reuteri In Humans

Consumption of purified microbes originating from human milk accelerates the wound-healing process in mice, according to a team of researchers from the Massachusetts Institute of Technology, Broad Institute of MIT and Harvard, and Aristotle University of Thessaloniki in Greece.

Previous population studies have established a connection between gut bacteria and overall health. However, the MIT study was the first to show that introduction of probiotic microbes -- in this case *Lactobacillus reuteri* originally isolated from human milk -- bestows accelerated wound healing capacity upon non-intestinal tissue: the skin.

To understand the mechanisms by which gut microbiota affect the body beyond the gastrointestinal tract, researchers led by Dr. Susan Erdman of MIT fed mice purified *L. reuteri* organisms in their regular drinking water.

In the study, mice that consumed *L. reuteri* experienced more rapid collagen deposition a key feature of wound repair. In fact, their wounds took half the time to heal when compared with matched control cases.

L. reuteri was also found to lessen impairments that typically occur during normal aging. The test subjects experienced health resiliency usually found in much younger individuals, including enhanced hair regrowth in skin.

This research matters because a person's wound healing capability is an important hallmark of their overall health. "Early life exposures to beneficial bacteria correlate with life-long wellness," explains Dr. Erdman. "That's why it is vital that we identify candidate microbes. In this study, even adult animals got the healing boost when consuming these purified bacteria. Our hope is that beneficial microbes will promote immune balance, and thus reduce autoimmune disorders, metabolic diseases, and some types of cancer."

In addition to creating an improved host inflammatory response, *L. reuteri* enhanced the immune cell properties through up-regulation of the neuropeptide oxytocin, a hormone known to be integral in milk production and maternal bonding. To test how oxytocin is necessary for the *L. reuteri*-induced improvement to wound healing, the researchers used mice that are genetically unable to produce oxytocin. They found that oxytocin-deficient subjects exhibited delayed wound repair processes even while eating *L. reuteri*.

The study's findings reveal unexpected roles for oxytocin as a novel component of microbe-associated biological networks linking mental, social, and physical health, with widespread potential benefits for high quality and healthful life. Continues Dr. Erdman, "This microbe-immune linkage has the potential to reduce hospitalizations,

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improve healing, lower risk for certain cancers, and enhance healthful aging."

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