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Fasting for rejuvenation of intestinal stem cells

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Although fasting has been a fad in recent times, scientists now have proof that fasting could reverse the age-related functionality loss of intestinal stem cells, as observed in an experiment with mice. The decline of the stem cells, from which new intestinal cells are formed, could result in difficulty in recovering from gastrointestinal infections and related conditions that affect the intestine. According to a new study by the Massachusetts Institute of Technology (MIT) biologists, fasting improves the regenerative ability of the stem cells in mice. The stem cells observed from mice that had undergone fasting, including both the young and aged, had doubled their regenerative capacity. The fasting mice broke down fatty acids instead of glucose, which stimulated the cells to become more regenerative. It was further revealed that certain transcription factors, called peroxisome proliferator-activated receptors (PPARs), get activated during fasting, which causes the switch from their usual carbohydrate metabolism to metabolising fatty acids. It was also found that treating the mice with a molecule that mimics the effects of PPARs reproduces these effects of fasting. To summarise, this research demonstrated that metabolic changes in the stem cells, promoting rejuvenation and cell division, are caused due to fasting. It provides evidence that fasting induces a metabolic switch in the intestinal stem cells, activating the fatty acid oxidation process, thereby enhancing the stem cell functioning during homeostasis and ageing. It also suggests that drug treatment could help stimulate regeneration in patients unable to fast. Therefore, it could be beneficial for cancer patients undergoing chemotherapy or people having intestinal infections. The researchers are now planning to study the working of this metabolic switch which promotes the stem cell’s regenerative ability, the effectiveness of such drug treatments, and also whether fasting affects the stem cells in other types of tissues.

Keywords: Fasting, Regeneration, Rejuvenation, Stem cells, Mice, Cell ageing

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