

Industrial application of a Gut Microbial Linoleic Acid Metabolite; 10-hydroxy-*cis*-12-octadecenoic acid (HYA)

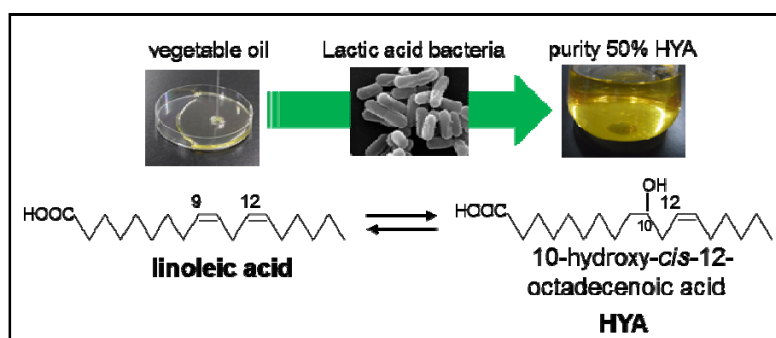
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10-Hydroxy-*cis*-12-octadecenoic acid (HYA) is a gut microbial metabolite derived from linoleic acid¹⁾, which is a main component of vegetable oil. Several physiological functions of HYA have been reported, e.g., improvement of intestinal epithelial barrier functions²⁾, reduction of triacylglycerol levels in hepatocytes³⁾, protective efficacy against gastric *Helicobacter* infections⁴⁾, and inhibition of the elevation of postprandial blood glucose⁵⁾. Based on these findings, we have developed a method for producing HYA via lactic acid bacteria enzyme and examined the effect of HYA in clinical trials.



It has been revealed that linoleic acid could be converted into HYA by reaction with enzyme CLA-HY⁶⁾. The principle of enzymatic conversion was established in lab, but it hasn't been implemented for practical use. This time, we established the method of producing purity 50% HYA on a large scale using only edible materials at our pilot plant.

It is important even for people with prediabetes to pay attention to sudden changes in blood glucose level after meals. Effective substance for control of glucose level that can be consumed routinely is expected to be useful for preventing diabetes mellitus. We conducted a randomized, placebo controlled, double-blind crossover clinical trial with men and women from 20 to 69 years of age to evaluate the effects of consuming HYA-containing food on postprandial blood glucose levels. We confirmed that HYA inhibits the elevation of postprandial blood glucose levels.

We now advance application studies of HYA toward industrialization as functional food to contribute to human wellbeing and enriched life.

References

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