The production of ADH and ALDH in *Lactobacillus* sp.

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Summary

Most of the alcohol drunk by people eventually occurs liver damages. Furthermore, some products generated during alcohol metabolism (e.g. acetaldehyde) are more toxic than alcohol itself.

This study has been carried out to investigate the effect of *Lactobacillus* sp. on alcohol metabolism. The sixteen species of LAB(lactic acid bacteria) were cultured in the MRS broth medium containing the various concentrations of 0, 10, 15, 20 and 25% ethanol at 37℃. For the measurement of the activities of ADH(alcohol dehydrogenase) and ALDH(aldehyde dehydrogenase), the products of LAB, the cultured cells were sonicated in a ice bath; supernatants were then centrifuged to obtain cytosols. ADH and ALDH activities were determined by a spectrophotometer (λ=340nm). The three species of LAB numbered Ⅰ, Ⅱ and Ⅲ were selected to investigate the effect in alcohol metabolism of rat hepatocytes, which produced higher amounts of ADH and ALDH rather than other LABs. The LAB numbered Ⅰ was cultured and the amount of ethanol, acetaldehyde and acetate concentrations in the culture medium without cells were analysed by head-space gas chromatography.

For the measurement of the real effect of ADH and ALDH produced by LAB Ⅰ in alcohol metabolism, the culture medium containing LAB Ⅰ was fed Sprage-Dawley rats. Then, BAC(Blood alcohol concentration), GOT(Glutamic oxaloacetic Transaminase) and GPT(Glutamic Pyruvic Transaminase) in the blood of the rats were measured by assay kits, which values were about two fold lower rather than that of the rats that were fed just alcohol. Therefore, LAB Ⅰ is able to use for the production of ADH and ALDH that have the real effect in alcohol metabolism in vivo test using rats.

In future, other two LABs numbered Ⅱ and Ⅲ will be investigated as like LAB Ⅰ, then an optimal culture system for the high production of ADH and ALDH using the LABs will be developed.

References

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