

Evaluation of Probiotic *Lactobacillus fermentum* for *in vivo* Aflatoxin B₁- binding and Elimination using Swiss Albino Mice

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Abstract

Objective: To study *Lactobacillus fermentum* sp. (LF) isolated from homemade curd for Aflatoxin B₁-binding and elimination at the intestinal level to reduce the chances of developing liver cancer using mice.

Experimental design: The efficient AFB₁ binding *L. fermentum* sp. were isolated using Rogosa Sharpe Agar and identified by 16s rRNA gene sequencing. Further they were subjected for *in vivo* AFB₁ binding using albino Mice. The Mice were randomly divided into four groups (n =10). The group 1 (Control) receives normal saline with routine diet, group 2 (AFB₁) a single dosage of AFB₁ (100µg) alternatively for 21days, group 3 (AFB₁+LF) receives 100 µl of LF (1x10⁸ CFU) 2 h before the AFB₁ dosage and group 4 (LF) given, 1x10⁸ CFU alone in PBS, through gavage and kept with routine diet. At the end of the experiment, the mice were euthanized by CO₂ asphyxiation. Blood samples were collected from retro-orbital venous plexus for determination of liver enzymes. The liver and kidney were dissected out and stored at -20°C for histopathological studies.

Results: The organ weight was condensed up to 6.7% in comparison with control, increased up to 22.2%. The levels of AST and ALT was increased to 132.12 U/L and 69.4 U/L compare to LF group, 96.3 and 43.4 respectively. Increased serum levels of antioxidant enzymes (GST, SOD) could be observed at AFB₁ group to 287.5 and 12.89 from normal 196.22 and 8.62 respectively

Conclusion: The *Lactobacillus fermentum* able bind the toxin effectively at the gut level, promised this strain to be used as probiotic for human. It activated antioxidant enzymes, thereby prevented the formation of AFB₁-8,9- epoxide which further prevented liver cancer.