

## Oral administration of *Lactobacillus casei* Shirota can ameliorate the adverse effect of an acute aflatoxin exposure in sprague dawley rats

### ABSTRACT

Aflatoxin B<sub>1</sub>(AFB<sub>1</sub>) is a toxic compound commonly found in some crops with an adverse health effect on human and animals. Some beneficial microorganisms (or probiotics) such as lactic acid bacteria have shown the ability to reduce the bioavailability of aflatoxins and its intestinal absorption. However, the dose and duration of aflatoxins exposure and probiotic treatment can influence the ability of probiotics to remove aflatoxins. Therefore, this research aimed to investigate the efficacy of oral probiotic *Lactobacillus casei* Shirota strain (LcS) induction in an acute exposure to AFB<sub>1</sub> in rats. Experimentally, Sprague Dawley rats were divided into three groups: AFB<sub>1</sub> only (n = 9); AFB<sub>1</sub> treated with LcS (n = 9); and control (no AFB<sub>1</sub> exposure) (n = 6) groups. The blood AFB<sub>1</sub> level of rats treated with LcS was slightly lower than the untreated AFB<sub>1</sub> induced rats ( $11.12 \pm 0.71$  vs  $10.93 \pm 0.69$  ng g<sup>-1</sup>). Also, LcS treatment slightly moderated the liver and kidney biomarkers in AFB<sub>1</sub> induced rats. However, a trend for a significant difference was only observed in ALT of AFB<sub>1</sub> induced rats treated with LcS compared to their counterparts ( $126.11 \pm 36.90$  vs  $157.36 \pm 15.46$ ,  $p = 0.06$ ). Rats' body weight decreased in all animals force-fed with AFB<sub>1</sub> with no significant difference between LcS treatment compared to the counterpart. In conclusion, this experiment indicated that probiotic LcS was able to slightly ameliorate the adverse effect of an acute exposure to AFB<sub>1</sub> in rats. However, future studies with longer probiotics treatment or higher probiotics dose is required to confirm these findings.

**Keyword:** Aflatoxin B; Acute aflatoxicosis; Animal study; Probiotic shirota