



# Intestinal lactic acid bacteria from Muscovy duck as potential probiotics that alter adhesion factor gene expression

Z.L. Xie\*, D.P. Bai\*, L.N. Xie, W.N. Zhang, X.H. Huang and Y.F. Huang

University Key Lab for Integrated Chinese Traditional and Western Veterinary Medicine and Animal Healthcare in Fujian Province, Fujian Agriculture and Forestry University, Fuzhou, China

\*These authors contributed equally to this study.

Corresponding authors: X.H. Huang / Y.F. Huang

E-mail: xhhuang138@hotmail.com / zjhyfang138@yahoo.com.cn

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**ABSTRACT.** The purpose of this study was to assess the suitability of lactic acid bacteria (LABs) isolated from Muscovy duck as a potential probiotic. Isolates were identified by targeted polymerase chain reaction and assessed *in vitro* for probiotic characteristics such as autoaggregation; surface-charge; hydrophobicity; tolerance to acidic pH, bile salts and protease; and expression of genes involved in Caco-2 cell adhesion. The LAB isolates exhibited strong resistance to high bile concentration and acidic pH, produced lactic acid, and bacteriostatic ( $P < 0.05$ ) were identified as bacilli compared with LAB isolates of cocci. Additionally, the LAB isolates showed high sensitivity to penicillin and tetracycline antibiotics, while they were resistant to ofloxacin, Macrodantin, and cotrimoxazole. The level of F-actin mRNA increased in the groups treated with CM3, *Salmonella enterica*, and CM3 + *S. enterica* ( $P < 0.0001$ ,  $P < 0.05$  and  $P < 0.05$ ). The level of cell adhesion molecule (CAM) and E-cadherin (E-cad) mRNA expression was significantly lower in the treatment group ( $P < 0.05$  for both) than in the

control. The F-actin, CAM, and E-cad mRNA levels were significantly lower in the *S. enterica* and CM3 + *S. enterica* groups ( $P < 0.01$ ) than in the CM3 group. Among these, RNA levels were higher in the CM3 + *S. enterica* than *S. enterica* group. These results indicate that the natural duck gut microflora is an excellent source for probiotic bacteria and can facilitate the establishment of criteria to select probiotic strains for the prevention of diarrhea.

**Key words:** Muscovy duck; Lactic acid bacteria; Probiotic; Adhesion factor gene expression