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## ***Weissella cibaria* Isolated from Red Cabbage Fermentation as Candidate for Potential Probiotic**

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### **Abstract**

Lactic acid bacteria (LAB) were screened from red cabbage (*Brassica oleracea* L. var. *capitata* f. *rubra* DC) fermentation for their probiotic properties such as cholesterol-lowering effect, antibacterial activity, and acid tolerance. For this purpose, red cabbage was shredded and fermented for one week in 15 % brine to prevent the growth of unwanted microorganism. MRS agar supplemented with 1 %  $\text{CaCO}_3$  was used to isolate and purify LAB. The LAB were identified using Gram-staining, catalase test, and 16S rRNA gene marker. The presence of bile-salt hydrolase was tested by incubating the bacteria in MRS agar supplemented with 0.5 % taurodeoxycholic acid (TDCA). Antibacterial activity was tested using the well diffusion method against Gram-positive and -negative bacteria. The bacteria were also tested for their ability to withstand acid environment (pH 3). The result showed that the colonies which produced clear zone in the media were catalase-negative, Gram-positive bacteria with coccoid-shaped morphology. They are categorised as moderate halotolerant LAB because of their ability to grow in 15 % brine. The bacteria identified based on 16S rRNA gene had 100 % identity with *Weissella cibaria*. The bacteria survived under acidic conditions up to 2 hours and exhibited BSH activity by forming halo surrounding the colonies due to precipitation of unconjugated deoxycholic acid. They as well had antimicrobial activity against *Escherichia coli* ATCC 25922, but not against *Staphylococcus aureus* ATCC 25953. This research concluded that LAB isolated from red cabbage fermentation in moderate brine concentration were *Weissella cibaria*, which had cholesterol-lowering and antibacterial activity, and can be developed as potential probiotic.

**Keywords:** Acid tolerant, antibacterial activity, bile-salt hydrolase, potential probiotic, *Weissella cibaria*