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Age- and Oxidative Stress-related Upregulation of the *caudal* Homeobox Gene via NF- $\kappa$ B Site in the *Drosophila* Midgut

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*Caudal*-related homeobox genes encode for intestine-specific transcription factors required for normal intestinal development and maintenance. Several studies have reported that the ectopic expression of CDX1 and CDX2, human homologues of *Drosophila caudal*, are associated with gastrointestinal cancers. The incidence of the majority of human gastrointestinal cancers increases dramatically with advancing age. However, the underlying molecular mechanisms of these pathologies and the regulation of age-related changes in *caudal*-related homeobox gene expression remain to be clearly elucidated. In this study, we demonstrate that *caudal* gene expression is upregulated in the adult midgut with age and oxidative stress. Furthermore, we demonstrate that age- and oxidative stress-related upregulation of the *caudal* gene is mediated by the NF- $\kappa$ B binding site located in the 5'-flanking region of the *caudal* gene. Our results may provide insight into the molecular mechanisms inherent to CDX-related tumorigenesis in the aged individuals.

**Key words:** *caudal*, Cdx, aging, NF- $\kappa$ B, *Drosophila* gut

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Purification and Characterization of a Bacteriocin Produced by Lactic Acid Bacteria Isolated from Fermented Foods

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Bacteriocin-producing lactic acid bacteria(LAB) were isolated from traditionally fermented foods by paper disk diffusion method, using *Micrococcus luteus* as a test organism. The bacteriocin showed inhibitory activity against *Bacillus cereus*, *Lactobacillus* sp, *Listeria monocytogenes*, and several strains of LAB. Solvents such as chloroform, ethanol, acetone, acetonitrile had no effect on bacteriocin activity. It was stable against pH variation between 3.0 and 7.0, but the activity reduced at pH from 9.0 to 11.0. It's activity was not affected by the heat treatment at 100°C for 30min and 50% of activity were retained after the heat treatment at 100°C for 60min. The bacteriocin was sequentially purified by ammonium sulfate precipitation, cation-exchange chromatography, and reverse-phase high-performance liquid chromatography(HPLC). The molecular weight was estimated by tricine-SDS-PAGE.

**Key words:** Bacteriocin, lactic acid bacteria, *Micrococcus luteus*, purification