ANTIBACTERIAL STABILITY OF SPONDIAS PINNATA (L. F.) KURZ LEAVES EXTRACT AND ITS MECHANISM

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This study was conducted to observe the stability of Spondias pinnata leaf (SPL) extract antibacterial at different pH, salt concentration and temperature, to examine its antibacterial effectivity on minced fish, and to determine its fraction’s antibacterial mechanism. The tested SPL ethanolic extract, n-hexane, chloroform, ethyl acetate and water fractions’ antibacterial activity against Bacillus cereus and Vibrio parahaemolyticus. Its stability against pH, salt, and thermal variation was studied, as well as the mechanism and application in fish. Ethyl acetate fraction and water fraction showed the highest activity against B. cereus (MIC 0.62 mg/mL). Protein profile analysis using gel electrophoresis showed that B. cereus cells exposed with SPL ethyl acetate fraction and water fraction showed thinner protein bands as compared to control. Severe damage of the cells treated with 3 MIC was also observed under SEM. Antibacterial activity of SPL ethanolic against Bacillus cereus and Vibrio parahaemolyticus were stable against heat treatment (80-121 °C for 15 min) and NaCl treatment (0-10% w/v), whereas the inhibition zone respectively at pH 4 (10.31±0.25 and 8.09±0.97 mm) was higher than pH 7 (8.45±0.52 and 6.66±1.84 mm). Application of SPL ethanolic extract in fish broth showed higher antibacterial activity than in fish flesh, which gave bactericidal effect at 3 MIC. Ethanol extract can be developed as a natural preservative in fish processing.
Keywords: Antibacterial activity, antibacterial mechanism, antibacterial stability, Spodias pinnata

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