

**DETERMINATION OF ANTIOXIDANT,
ANTIMICROBIAL AND METAL CHELATING
PROPERTIES OF BIOACTIVE COMPOUNDS IN**

Sepioteuthis lessoniana **INK**

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ABSTRACT

Big fin reef squid (*Sepioteuthis lessoniana*) is a widely distributed species in Northern coast of Sri Lanka and generates 52% of total body weight as waste due to high utilization in processing industry while causing a series of ecological problems and environmental pollution. As these by-products are a potential source of good bioactive compounds, this study aimed to analyze the bioactive properties of hydrolysates developed from squid crude ink. Ink sacs of *S. lessoniana* were collected and squeezed. Moisture, protein, ash and lipid content in crude ink were analyzed. Trypsin (1:100) was used in the preparation of enzymatic hydrolysates from lyophilized ink at pH of 7.8 by incubating at 37°C for 0, 3, 6, 9, 12 and 24 hours followed by heat inactivation at 100°C for 15 minutes. Best time course (3 hours) was detected using 15% SDS-PAGE and directed to develop chemical hydrolysates using 6 M NaOH (basic), 6 M HCl and 6 M Acetic acid (acidic) in 2:1 ratio respectively while incubating at 37°C for 3 hours followed by heat inactivation at 100°C for 15 minutes and 15% SDS-PAGE was conducted. DPPH radical scavenging assay was used to detect antioxidant activity, metal chelating activity was used to detect Fe²⁺ chelating activity while agar well diffusion method was used to detect antimicrobial activity in selected best hydrolysates. According to the proximate analysis, moisture and protein contents were 75.53±2.10% and 19.73±2.44% respectively in crude ink. DPPH scavenging assay showed a significant difference between the treatments (p<0.05) and Fe²⁺ chelating activity assay revealed that there was no significant difference among those three hydrolysates (p>0.05). However, highest DPPH scavenging activity and Fe²⁺ chelating activity values (61.54±2.96% and 30.35±3.91%) were obtained from acid hydrolysis. The results obtained from antimicrobial assay revealed that the highest inhibition zones were from hydrolysates developed from acids. Accordingly, the study concluded that hydrolysates produced by incubating with 6 M HCl and 6 M Acetic acid for 3 hours followed with heat inactivation has better antioxidant, antimicrobial and metal chelating activities compared to rest.

Keywords: Squid ink, Enzymatic hydrolysates, Chemical hydrolysates, Antioxidant, Metal chelating