

## Comparison of Antioxidant Activity of Hydrolysate Products of Crude Collagen Extracted from Chicken Egg Shell Membrane Using Different Methods

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Collagen is a highly valuable protein used in food industry. Egg shell membrane is a safe source for collagen. Extraction of collagen from chicken membrane and producing its hydrolysates were carried out using different methods. Objective of this study was to extract collagen from chicken egg membrane with simple and non-toxic method followed by hydrolysis to find out the functional properties of the hydrolysates. Shell membrane was separated by manual peeling by adding 0.5 M Acetic acid, 0.5 M Citric acid followed with extraction of collagen with pepsin digestion. pH of the extracted collagen was adjusted to 6.5 and hydrolyzed using protease with different time combinations (0, 3, 6, 9, 12, 24 hours) at 37 °C followed by heat inactivation at 100 °C for 15 min. Best hydrolysates were selected by 10% SOS-PAGE by visual observations. Selected hydrolysates were subjected to antioxidant activity by Thiobarbituric Acid Reactive Substances (TBARS) method and Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity. The highest collagen yield was observed from citric acid (0.15 g 1 0g<sup>-1</sup>) extraction than acetic acid (0.08 g10g<sup>-1</sup>) treatment ( $P > 0.05$ ). SOS-PAGE did not show bands even 0 hours, so, 0 hour hydrolysates were selected for antioxidant testing. In DPPH analysis, citric acid extraction shows higher scavenging activity (96.79%) than acetic acid (72.37%) ( $P < 0.05$ ). However in TBARS method also did not show significant difference among the treatments ( $P > 0.05$ ) and it showed 0.00 mg 1<sup>-1</sup> level of Malonaldehyde. This concludes that collagen hydrolysates showed good antioxidant activity with citric acid extraction than acetic acid extraction comparing with the ascorbic acid as positive control which can be used as a natural antioxidant in food industry.

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