

## In-Vitro Antihypertensive and Antioxidative Properties of Alcalase-Derived *Moringa Oleifera* Seed Globulin Hydrolysate and its Membrane Fractions

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**M**oringa oleifera seed globulin was obtained through the process of dialysis from the defatted seed flour, hydrolyzed with Alcalase and subsequently fractionated into different molecular weight peptides sizes (<1, 1-3, 3-5 and 5-10 kDa) by membrane ultrafiltration in an amicon stirred ultrafiltration cell. The samples were tested for antioxidant properties through free radical scavenging abilities (DPPH and hydroxyl radical scavenging assays), inhibition of metal iron (FRAP and metal chelation tests) and in-vitro antihypertensive properties through angiotensin converting enzyme (ACE) and renin inhibition tests. The result revealed low level of hydrolysis (4.40%) by alcalase. Compared to the hydrolysates, membrane fractionation led to improved antioxidative properties of 67.77% (<1 kDa), 44.15% (5-10 kDa), 150% (5-10 kDa) and 12% (3-5 kDa) increase for DPPH, hydroxyl radical scavenging assays, FRAP and metal chelation ability respectively. While there was 31.85% increase in inhibition against the ACE (5-10 kDa), a reduction of 29.81% inhibition against the renin enzyme (5-10 kDa) was obtained after membrane fractionation. There was no particular correlation between the peptide sizes and the antioxidative or in-vitro antihypertensive properties. However, the antioxidative properties increased with increasing concentration except for hydroxyl radical scavenging and metal chelation tests. With the results obtained in this study, we concluded that alcalase globulin hydrolysate and its membrane fractions possessed potent bioactive peptides which can be utilized in the development of functional foods and nutraceuticals.

**Keywords:** *Moringa oleifera* seed, globulin, hydrolysate, membrane fractions, ACE, renin