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## Nutritional, Zn Bioavailability and Antioxidant Properties of Water Leaf (*Talinum triangulare*) Mucilage

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### Abstract

In South-West and South-East Nigeria, when water leaf (*Talinum triangulare*) is to be cooked the leaves are squeezed with or without salt to remove the mucilage from the leaf before cooking, the resultant extracted mucilage are thrown away. Water-leaf mucilage was extracted to obtain a greenish, viscous solution. The solution was heated and precipitated with ethanol and acetone. The greenish coloured solid was dried in an oven at the temperature of 45°C to give a yield of 21 g mucilage kg<sup>-1</sup> water leaf. The nutritional evaluation (proximate composition, mineral and Zn bioavailability determination) and antioxidant properties investigation (vitamin C, total phenol, flavonoid, Ferric reducing antioxidant power (FRAP) and DPPH free radical scavenging ability) of the mucilage was subsequently carried out. The result of the study revealed that the water leaf mucilage is high in protein (54.30 g per 100 g) and fat (29.00 g per 100 g) with a high energy value (499.8 kcal). However it has low fibre content of 3.50 g per 100 g. The mucilage is also high in minerals Ca, Mg and Fe but low in Zn 0.76 ppm. The calculated phytate : zinc molar ratio of 30.0 for the mucilage was twice the critical value for reduced zinc bioavailability (15.0). However the calculated calcium : phytate molar ratio of 5.44 was just below 6.0. The calculated [Ca][Phytate]/[Zn] molar ratio (0.59 mol kg<sup>-1</sup>) was just above the critical level. The flavonoids of the mucilage was found to be 9.17 mg QE g<sup>-1</sup> at 250 μg ml<sup>-1</sup> and 3.57 mg QE g<sup>-1</sup> at 500 μg ml<sup>-1</sup> while the total phenol was 2.98 mg GAE g<sup>-1</sup> at 50 μg ml<sup>-1</sup> and 1.23 mg GAE g<sup>-1</sup> at 100 μg ml<sup>-1</sup>. The water leaf mucilage exhibited a high level of antioxidant activities as depicted by high reducing power FRAP (6.37 mg AAE g<sup>-1</sup>) and DPPH scavenging ability (28.78 %).

The high antioxidant activity as depicted by the high FRAP and DPPH scavenging ability of the mucilage of waterleaf vegetable can contribute to the health management of man.

**Keywords:** Antioxidant, nutrient, total phenol, water leaf, Zn bioavailability