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Cochlospermum tinctorium Root Powder Sauce Fortified with *Moringa* Leaf Powder for Women in Reproductive Age

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Abstract

Micronutrient deficiencies are known as one of the main problems that affect women in reproductive age in most countries. Food to food fortification is one of the strategies that has been successfully used to sustainably combat such deficiencies. *Moringa oleifera* is one available species used for its nutritional proprieties. This research aims at designing *Cochlospermum tinctorium* root powder (koata) sauce fortified with moringa oleifera leaf powder for women in reproductive age and assess its micronutrients composition and their i*n vitro* solubility. The fortification rate was defined according to literature review and local population practices. Micronutrients (Iron, zinc and calcium) content was determined by inductively coupled plasma-optical emission spectrometer (ICPAES) method. *In vitro* solubility was determined using simulated gastrointestinal digestion with enzymes. Two different fortification rates (12.3% and 21.9%) were tested for acceptability among women. Results showed that fortification increases significantly ($p < 0.05$) iron content from 85.7± 0.43 mg/100g to 91.2± 0.5 mg/100 g, increases calcium content from 4867.6± 8.2 mg/100 g to 4920.2± 25.7 mg/100 g) and significantly reduces zinc content from 19.5± 0.8mg/100 g to 13.3± 0.4 mg/100 g. In vitro solubility increased significantly in fortified *C. tinctorium* root sauce ($p < 0.05$) respectively for iron from 12.5± 0.2% to 17.8± 0.9%, zinc from 35.2± 3.2% to 92.6± 0.6% and calcium from 72.9± 2.5% to 96.8± 0.9%. Acceptability test showed that there is no significant difference between the preference of women for *C. tinctorium* root powder sauce with a fortification rate of 12.3% dw and for *C. tinctorium* root powder sauce with a fortification rate of 21.9% dw ($p < 0.05$). *Cochlospermum tinctorium* root powder is pointed out as a good source of nutrients that deserves thorough investigations to be promoted as a food supplement.

Keywords: Food to food fortification, *in vitro* solubility, iron, micronutrient deficiencies, zinc

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