Cochlospermum tinctorium root powder sauce fortified with moringa leaf powder improves in vitro solubility of minerals for women

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INTRODUCTION

Micronutrient deficiencies are known as one of the main problems that affect Women in Reproductive Age (WRA) in most countries (Das et al, 2013). Food to food fortification is one of the strategies that has been successfully used to sustainably combat such deficiencies. In this study C. *tinctorium* root powder (Fig 2) sauce was fortified with *M. oleifera* leaf powder (Fig 1).

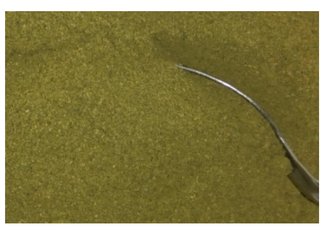

Fig 1: *Moringa oleifera* leaf powder (PFMo)

Fig 2: *Cochlospermum tinctorium* root powder

OBJECTIVES

The study aimed at reducing micronutrients deficiencies in WRA. Specifically, it aimed at:

(i) Assessing the effect of fortification with *M. oleifera* leaf powder (PFMo) on content and in vitro solubility of mineral in C. *tinctorium* root sauce for WRA

(ii) Determining the contribution of C. *tinctorium* sauce fortified with PFMo to iron, zinc and calcium daily need of WRA.

METHODS

1. Fortification rate { Literature review and local population practices

2. Micronutrients (Iron, zinc and calcium) { Inductively coupled plasma optical emission spectrometer method (Temminghof et al, 1997)

3. In vitro solubility (IVS) { Gastrointestinal digestion with enzymes (Kiers et al, 2000)

4. Cover rate (CR) { Cover rate were determined based on Daily Need of WRA in Fe, Zn, Ca and content of soluble mineral in C. *tinctorium* root sauce

REFERENCE

Kiers, J. L., Nout, R. M. J. & Rombouts, F. M. 2000. In vitro digestibility of processed and fermented soya bean, cowpea and maize. Journal of the Science of Food and Agriculture, 80, 1325-1331

RESULTS

Fortification increases the solubility of iron, calcium and zinc (Table 1).

Table 1 : Minerals contents, in vitro solubility and soluble mineral contents of fortified and unfortified *C. tinctorium* root sauce

Target Mineral	Sauce	Contents (mg/100g dw)	IVS (%)	Soluble mineral (mg/100g dw)
Iron	Unfortified	85.7±0.4 [a]	12.5±0.2 [a]	10.7±0.8 [a]
	Fortified	**91.2±0.5 [b]**	**17.8±0.2 [b]**	**16.2±0.1 [b]**
Zinc	Unfortified	19.5±0.8 [a]	35.2±3.2 [a]	6.9±2.56 [a]
	Fortified	**13.3±0.4 [b]**	**92.6±0.6 [b]**	**12.3±0.24 [b]**
Calcium	Unfortified	4867.6±8.2 [a]	72.9±2.5 [a]	3548.0±20.5 [a]
	Fortified	**4920.2±25.7[a]**	**96.8±0.9 [b]**	**4762.6±23.13 [b]**

For each mineral ant for each parameters, means with the same letter in the same column are not significantly different p>0.05

Considering that WRA consume 200g/day of C. *tinctorium* root powder sauce, it is noticed that cover rate of iron, zinc and calcium for WRA increased with fortification (Figure3)

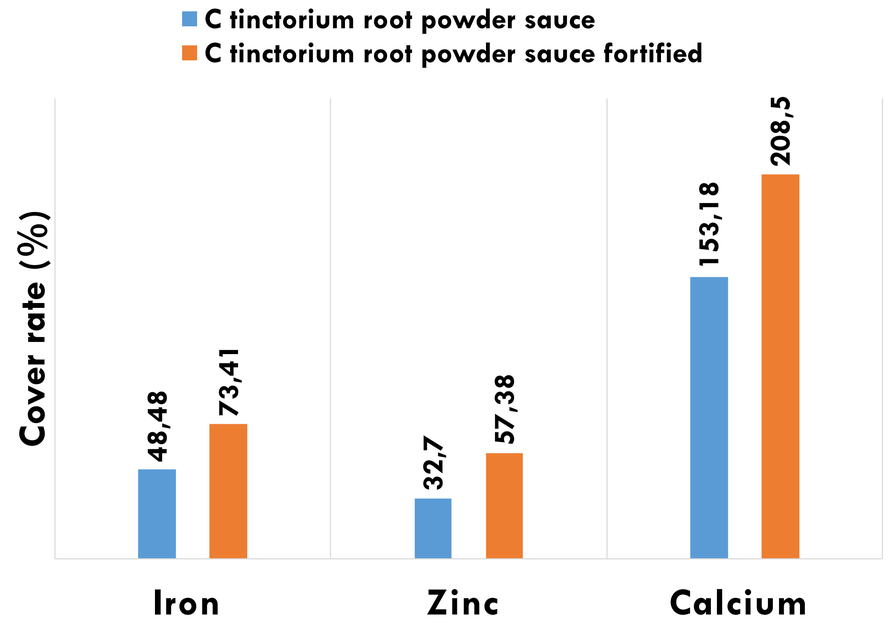

Figure 3 : Cover rate of Fe, Zn and Ca for WRA with consumption of fortified and unfortified C. *tinctorium* root powder sauce

CONCLUSION AND RECOMMANDATION

Cochlospermum tinctorium root powder is pointed out as a good source of nutrients that deserves thorough investigations to be promoted as a food supplement.

ACKNOWLEDGMENTS

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