



Alleviation of Iron Deficiency Through Food-to-Food Fortification of Sorghum with Moringa and Baobab

John Lubaale, John R.N Taylor, Kwaku G. Duodu

University of Pretoria, Pretoria, South Africa

Abstract

Introduction: Iron deficiency is a major problem in sub-Saharan Africa. This is mainly due to heavy reliance on diets based on cereals as they also contain inhibitors of iron bioavailability such as phytate. Food-to-food fortification of cereal-based diets with micronutrient-rich plant foodstuffs is gaining increasing interest as a sustainable way to alleviate micronutrient deficiencies.

Methodology: Sorghum-based porridges (wet cooked or instantized using extrusion cooking) fortified with moringa leaf powder and baobab fruit pulp were prepared. Fortification of the sorghum porridges with moringa was done before processing while baobab fruit pulp was added both before and after. Iron bioaccessibility of the porridges was determined using *in vitro* equilibrium dialysability assay.

Results and Discussion: Fortification with moringa leaf powder reduced the amount and percentage of bioaccessible iron. The addition of baobab fruit pulp powder before cooking (wet cooked or instantized using extrusion cooking) generally increased the amount and percentage of bioaccessible iron, while its addition after cooking increased the percentage of bioaccessible iron but had no effect on the amount. The addition of moringa leaf powder in combination with baobab fruit pulp powder prior to cooking resulted in a significant decrease in the amount and percentage of bioaccessible iron. The positive effect of adding baobab fruit pulp powder on iron bioaccessibility can be attributed to its high content of organic acids (citric acid and ascorbic acid), which are known to enhance iron bioaccessibility. While moringa has a high content of citric acid, it also has phytate accounting for its negative effect on iron bioaccessibility.

Conclusions: Fortification with baobab fruit pulp powder both before and after cooking has the potential to improve available iron in sorghum porridges and should be considered as a food-based approach to alleviate iron deficiency.

Biography: John Lubaale

John Lubaale is a PhD Candidate in food chemistry at the university of Pretoria currently in his third year. John's focus is smart foods with emphasis on macro and micronutrient chemistry as well as food antioxidants and health promoting properties of African grains.