



## Biofortified beans for the prevention of iron-deficiency anemia.

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### Abstract:

Iron deficiency is an important public health problem, with more than 1.5 billion people affected worldwide. It causes iron-deficiency anemia with deleterious effects in pregnant women and children under five years of age, including growth retardation, cognitive impairment, increased morbidity and poor pregnancy outcome. Biofortification through crossbreeding constitutes a promising approach to obtain crops with high iron content (>60% increase in biofortified beans). We conducted a series of absorption studies in young adult females at the University of Rwanda, to evaluate the role of potential inhibitors of iron absorption from beans, using multiple test meals. Iron stable isotope labels <sup>57</sup>ferrous sulfate and <sup>58</sup>ferrous sulfate were used. Iron absorption was measured based on erythrocyte incorporation of iron stable isotope labels 14 days after the test meals. Absorption studies showed higher quantity of iron absorbed from low phytic acid beans as compared to normal beans. An efficacy study conducted over 4.5 months among young adult females at the University of Rwanda Huye campus showed greater improvement of hemoglobin concentration (3.8 g/L) and log serum ferritin (0.1 log µg/L) among the group receiving biofortified beans as compared to the group receiving control beans. There was a 4.2 g/L increase in hemoglobin for every 1 g Fe consumed over 128 days of feeding trial (P<0.05).

In conclusion, biofortification of beans is a promising approach to solve the problem of iron deficiency anemia in countries with high bean consumption.



### Biography:

Jean Bosco Gahutu, MD, PhD, FHEA (UK), is professor of physiology and director of research and innovation at the College of Medicine and Health Sciences, University of Rwanda. He has done extensive research on biofortified beans. He has a Scopus h-index of 13.

### Recent Publications:

1. Reduced prevalence of *Giardia duodenalis* in iron-deficient Rwandan children, Ina Danquah, Jean-Bosco Gahutu, Ralf Ignatius, Frank Mockenhaupt
2. Measles seroprevalence and outbreak in Rwanda: evidence from measles epidemiological surveillance and control, S.E. Kalimba, Jean-Bosco Gahutu, M. Gatera, T. Bergström
3. Detection of *Giardia duodenalis* assemblage A and B isolates by immunochromatography in stool samples from Rwandan children, Ralf Ignatius, Jean-Bosco Gahutu, Christian Klotz, Frank Mockenhaupt
4. Male reproductive hormone profile in Rwandan students, Jean-Bosco Gahutu

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