

Bioavailability of Iron in Some Selected Fiji Foods using In vitro Technique

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Abstract : Iron the most essential trace element in human nutrition. Its deficiency has serious health consequences and is a major public health threat worldwide. The common deficiencies in Fiji population reported are of Fe, Ca and Zn. It has also been reported that 40% of women in Fiji are iron deficient. Therefore, we have been studying the bioavailability of iron in commonly consumed Fiji foods. To study the bioavailability it is essential to assess the iron contents in raw foods. This paper reports the iron contents and its bioavailability in commonly consumed foods by multicultural population of Fiji. The food samples (rice, breads, wheat flour and breakfast cereals) were analyzed by atomic absorption spectrophotometer for total iron and its bioavailability. The white rice had the lowest total iron 0.10 ± 0.03 mg/100g but had high bioavailability of $160.60 \pm 0.03\%$. The brown rice had 0.20 ± 0.03 mg/100g total iron content but $85.00 \pm 0.03\%$ bioavailable. The white and brown breads showed the highest iron bioavailability as 428.30 ± 0.11 and $269.35 \pm 0.02\%$, respectively. The Weetabix and the rolled oats had the iron contents 2.89 ± 0.27 and 1.24 ± 0.03 mg/100g with bioavailability of 14.19 ± 0.04 and $12.10 \pm 0.03\%$, respectively. The most commonly consumed normal wheat flour had 0.65 ± 0.00 mg/100g iron while the whole meal and the Roti flours had 2.35 ± 0.20 and 0.62 ± 0.17 mg/100g iron showing bioavailability of 55.38 ± 0.05 , 16.67 ± 0.08 and $12.90 \pm 0.00\%$, respectively. The low bioavailability of iron in certain foods may be due to the presence of phytates/oxalates, processing/storage conditions, cooking method or interaction with other minerals present in the food samples.

Keywords : iron, bioavailability, Fiji foods, in vitro technique, human nutrition

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