

## Determination of phytate, iron, zinc, calcium contents and their molar ratios in commonly consumed raw and prepared food in Malaysia

### ABSTRACT

The inhibitory effect of phytate on the bioavailability of iron, zinc and calcium was determined by measuring their molar ratios. A total of 29 food samples consisting of 12 rice and rice products, 5 wheat and wheat products, 5 grains and cereal based products and 7 different popular varieties of cooked rice and rice products were selected. The phytate content was analysed using anion-exchange chromatography whereas mineral contents were analysed using atomic absorption spectrophotometry(AAS). One-way ANOVA test was used to statistically analyse the mean difference between the phytate and mineral contents between the food group samples. In general, results show that cooked products have lower content of phytate and minerals as compared to raw products. This could be due to the influence of the cooking method on phytate and mineral content in the food. Based on one-way ANOVA test, there were no significant difference in phytate and zinc content between four food groups ( $p > 0.05$ ). Significant differences were found only in iron and calcium content ( $p < 0.05$ ). Of the 29 food samples, 25 food samples had a phytate/iron molar ratio  $> 1$ , 5 food samples had a phytate/zinc molar ratio  $> 15$  and 23 food samples had a phytate/calcium molar ratio of 0.24. These results show that although many of the food samples analysed had high mineral content, the high phytate content may impair the bioavailability of the mineral in the body.

**Keyword:** Calcium; Iron; Molar ratios; Phytate; Raw and prepared food; Zinc