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SUPATRA RATTANAPAISARNKIT: RADIOMETRIC METHOD FOR DETERMINING AVAILABILITY FOR IRON FROM REGULAR DIET FOR PATIENTS IN SIRIRAJ HOSPITAL. THESIS ADVISORS: NOPAMON SRITONGKUL, M.Sc., MALULEE TUNTAWIROON, M.S. 98 p. ISBN 974-662-261-7

An in-vitro ^{59}Fe radiometric method for estimating food iron availability was used to examine the effect of pH on the ionizability of nonheme iron in 143 regular meals for hospitalized patients in Siriraj Hospital, 77 of which were simple meals and 66 of which were special meals. The method involved simulated gastrointestinal digestion followed by measurement of soluble iron. After homogenization and incubation in pepsin-HCl, the pH was adjusted to duodenal pH, 6.5 and 7.0 and the digestion was continued. The % ionizable iron at both pH was shown to be highly correlated with % iron absorption estimated from the same diet, $r = 0.8726$ and 0.7826 for simple and special meals respectively, but there was no difference between the % ionizable iron at pH 7.0 and the estimated iron availability while the % ionizable iron at pH 6.5 was quite overestimated. The iron intake, total phosphorus phytate and the iron density of the special meals were significantly higher than those of the simple meals at 0.001 level. The phytate content and the energy intake of both meals was similar. Based on these observation it is estimated from the ionizability at pH 7.0 that availability for nonheme iron in simple and special meals were 1.08 and 2.41 mgFe per day. The 2.41 mg iron absorbed from special meals was within the limit suggested by FAO/WHO for high risk groups of population, 1.82, 2.02, 1.31 and 2.38 mgFe per day for growing girls and boys, lactating and menstruating populations respectively. The 1.08 mg iron absorbed from simple meals was insufficient to meet the RDAs for most of the groups. It is suggested that nutrient value with respect to iron of simple diet should be improved either by including varieties of food item with high iron content, and ascorbic acid or avoiding the presence of high quantities of iron inhibiting substances. It can be concluded from the study that the ionizable iron at pH 7.0 can be used as a reliable measure for nonheme food iron availability.