ROLE OF DIET RELATED HABITS AND COOKING PRACTICES ON BIOAVAILABILITY OF IRON, COPPER, AND ZINC AND STATUS OF IRON IN VEGETARIANS

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Average diet in most of the Asian countries being cereal based, its iron and zinc content has poor bioavailability. Investigations were carried out using in vitro studies and then diet survey to assess the effect of dietary practices like use of acidic foods, green leafy vegetables (GLV), naturally fermented foods for enhancement of bioavailability of iron and zinc while use of tannic acid rich foods, frequent drinking of strong tea/coffee in place of meals, chewing of betel leaf and betel nuts, tobacco for their inhibitory action on absorption of these trace metals. When tea, coffee, betelnut or curry powder was added to “idli” (a fermented food using cereal and legume mixture), 65–88% reduction in ionisable iron was observed, while addition of fresh coriander to “idli” increased the ionisable iron by two to three times in 8 out of 9 cereal-legume combinations. The bioavailable densities of iron, zinc and copper for 25 commonly consumed green leafy vegetables based preparations were 0.13 ± 0.01 , 0.11 ± 0.01 , 0.07 ± 0.01 mg/100Kcal, which are higher than the foods based on cereals or legumes. Bioavailability iron density in particular, was three times higher than average value for composite cereal-based meal that is 0.036 mg/100Kcal. This indicated GLV as promising fortificants for vegetarians. When hemoglobin values were examined in light of habits, on 324 men and women, groups consuming more condiments (Tamarind), and coffee had higher ($p < 0.05$) prevalence of anemia than the other two groups. Similar observations were noted on 106 pregnant women where users of tobacco and betelnut had significantly lower levels of hemoglobin ($p < 0.05$).