

***In vitro* study to assess the free radical scavenging ability of added natural iron chelators in diet**

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Free radical mediated damages are predominant in beta thalassemia patients who suffer from transfusional iron overload condition. Iron chelators have the ability to bind with free, reactive, excess iron in the body to minimize the reduction of ferrous ions that leads to the production of hydroxyl radicals. However, the synthetic chelators that are given to minimize damages are expensive and their continuous intake may result in adverse side effects. This study was carried out to assess the feasibility of incorporating potential food sources rich in natural iron chelators to the diets to minimize the free radical mediated damages through stimulated digestion models. The natural iron chelators used are rich of plant phenols resembling chelating drugs. Fifteen (15) diet plans were formulated based on four ingredients namely, red rice, fresh milk, turmeric and black tea that are rich in natural iron chelators against a control diet (no iron chelator source). The formulated diets were digested by an *in vitro* method using the stimulated gastrointestinal conditions. The effect of free radical scavenging ability of the obtained digesta was comparatively tested using the 2,2-Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay. The results showed that free radical scavenging ability had a significant (p value < 0.05) positive correlation with the total phenolic content of the digesta. Therefore, it could be concluded that incorporating food sources rich in natural iron chelators to the diet can increase the oxidative potential of the diet and minimize the free radical mediated damages under *in vitro* conditions.

Keywords: Free radical scavenging ability, iron overload, natural iron chelators, stimulated digestion

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