Iron Bioavailability In Vitro Digestion using Ferrous Fumarate and NaFeEDTA on Soy-Based Food

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**Abstract**

Low intake of iron from food is a major cause of iron deficiency anemia. To overcome iron deficiency disease in Indonesia is through the fortification iron in soybean-based foods which is eated by the majority of Indonesian.The content of phytic acid and polyphenols in soybean can interfere iron absorption and reduce levels of iron in the blood. In this study we obtained the ratio between Fe and polyphenols of 1: 3 that used for additional variations of fortificant. In this study used two different types of fortificantie, NaFeEDTA(1) and Ferrous Fumarate(2) to be mixed in soybean-based foods such as *tempeh,* tofu, and soy milk. These two types of fortificant added on some additional variations and tested the bioavailability by in-vitro digestion. In-vitro digestion of the soy-based foods using pepsin enzyme, mixture of pancreatin enzyme,and bileextract. The concentration of Fe before fortification process, Fe non polyphenols, and Fe invitro-process are determined by mean of AAS (Atomic Absorption Spectroscopy). The results of this study indicate that the bioavailability of iron in fortified soybean-based foods can be absorbed either in fortificant NaFeEDTA and Ferrous Fumarate. The highest effectiveness value of fortificant NaFeEDTA in tempeh, tofu ,and soybean was respectively 64.82%, 35.07% and 32.60%. While the highest effectiveness value of fortificant Ferrous Fumarate in tempeh, tofu ,and soybean was 18.87%, 3.60% and 7.00% respectively.

Keywords: soybean, NaFeEDTA, Ferrous Fumarate, In Vitro, fortification