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Properties of soybean (Glycine max) seed ferritin affected by its interaction with isoflavones

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Solutions have received considerable attentions as phytoestrogen, which co-exist with soybean seed ferritin (SSF), a new class of naturally occurring iron supplement, in many kinds of soybean foodstuffs. Therefore, interactions between these two natural components are most likely to occur, thereby affecting food quality. However, so far, there has been little information available on the interactions. In this study, the interactions between two main isoflavones (daidzein and genistein) in soybean seed and SSF were carried out by using fluorescence titration, scattering light analyses and transmission electron microscopy for the first time. Results indicated that these two isoflavones can interact with ferritin through binding, resulting in changes in the tertiary structure of the protein. Consequently, such interactions command protein association, which markedly suppressed ferritin degradation by pepsin at pH 2.0 and pH 4.0 respectively. This property is beneficial for application of holo SSF as a novel iron supplement.

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