Effects of subcritical water treatment on functional properties of soy protein isolate
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Abstract: Subcritical water treatment (SCW) is the noticeable alternative method to develop the functional properties of protein due to non-toxic, inexpensive and environmentally friendly. This work investigated the effects of SCW on soy protein isolate (SPI) prepared from defatted soybean. Functional properties of SPI were analyzed in terms of protein solubility and viscoelastic properties. 5% (w/v) SPI was treated by SCW for 5, 15 and 30 min at 120 °C, compared with untreated SPI. The solubility of SCW-SPI for 5, 15 and 30 min and untreated SPI was 51.10±0.40, 52.00±1.22, 56.00±2.08 and 46.57±4.29 %, respectively. The solubility increased with increasing treatment time because of protein aggregates dissociation. The viscoelastic properties of all samples exhibited the weak gel because their $G'$ values of all samples were higher than $G''$ values. Moreover, the $G'$ values of SCW-SPI were decreased when increased the time of treatment due to complex networks of protein collapse. The results suggested that functional properties of SPI were affected by SCW. This could be an alternative process to modify protein.

Keywords: Soy protein isolate, Solubility, Viscoelastic properties