

超声波处理对小麦胚芽球蛋白理化和功能性质的影响Effect of Ultrasound Treatment on Physicochemical and Functional Properties of Wheat Germ Globulin

贾俊强 马海乐 赵伟睿 王振斌 何荣海 骆琳

江苏大学

关键词: 小麦胚芽球蛋白 理化性质 功能性质 超声波处理 试验

摘要: 采用超声波处理小麦胚芽球蛋白以提高其功能性质。研究了超声波处理对小麦胚芽球蛋白理化和功能性质的影响。结果表明: 经超声波处理后, 小麦胚芽球蛋白的巯基和二硫键含量、紫外光谱和荧光光谱均发生了显著的变化。随着超声波功率的增加, 小麦胚芽球蛋白的疏水性、起泡性、起泡稳定性、乳化性和乳化稳定性都降低; 当超声波功率大于900W时, 由于小麦胚芽球蛋白重新伸展, 疏水基团暴露增多, 引起疏水性、起泡性、起泡稳定性、乳化性和乳化稳定性增加。此外, 超声波功率对小麦胚芽球蛋白的溶解度有显著影响, 随着超声波功率的增加其溶解度明显增加。因此, 通过选择适宜的超声波功率水平能够改善小麦胚芽球蛋白的理化和功能性质。In order to improve the functional properties of wheat germ globulin, the ultrasound treatment method is adopted. Effect of ultrasound treatment on physicochemical and functional properties of wheat germ globulin is studied. Results show that free sulfhydryl and disulfide bond contents, ultraviolet spectrum, and fluorescence spectra of wheat germ globulin are changed significantly after ultrasound treatment. The hydrophobicity, foaming capacity, foaming stability, emulsifying activity and emulsifying stability of wheat germ globulin decrease with the increase of ultrasonic power. When the ultrasonic power is more than 900W, the hydrophobicity, foaming capacity, foaming stability, emulsifying activity and emulsifying stability of wheat germ globulin are improved due to wheat germ globulin unfolding and exposed hydrophobic group increasing. Moreover, ultrasonic power has significant influence on the solubility of wheat germ globulin, which is gradually increased with the increase of ultrasonic power. Thus, ultrasound treatment could be used to modify the physicochemical and functional properties of wheat germ globulin by appropriate selection of ultrasonic power level.

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