加,400W 样与对照样相比,起泡能力得到明显提高。这主要是因为功率增加后声能密度增大及声能转化为更多的化学能和物理能,SPI 受机械剪切、搅拌空化作用增强。功率增加破坏大豆蛋白的构型程度加剧,更多的疏水基团因蛋白分子展开而暴露,因此提高了蛋白质的表面疏水性,同时降低了表面张力,从而形成更多的泡沫。

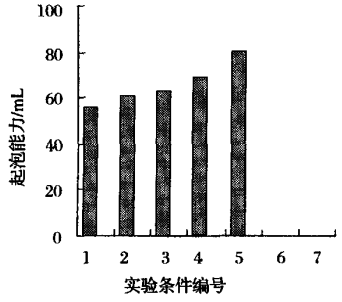

图 9 超声处理功率对 SPI 起泡能力的影响

3 展 望

超声是改善大豆蛋白功能性质的一种新型方法,本文探讨了超声处理对 SPI 表面性质的影响并得出初步结论,为超声技术在大豆蛋白改性领域应用提供了理论依据。超声波引起大豆蛋白质表面性质的变化机理还有待更深一步的研究,以便将超声技术应用与大豆蛋白的实际生产中。

参 考 文 献

1 Mclements D J. Advances in colloid interface sci[J]. Food Hydrocollids, 1992,37:33~72

2 Shoh A. Chemical, biological and physical effects in ultrasonic [J]. J Agric Food Chem, 1988,97~122

3 Roberts R T. Ultrasonic absorption in aqueous solution of lysozyme[J]. Chem Ind, 1993,15:119~123

4 Folros J D. Ultrasonic characterization of foods and drinks: principles, methods and applications[J]. Food Technol, 1994,48:79~84

5 Pearce K N. Characteristics of the absorption of ultrasound by protein solution[J]. J Agric Food Chem,1978,26(3):716~723

6 Philips V H. Effects of neutral salts on the stability of whey protein isolate foams[J]. J Food Sci,1974,39:368

7 Beuchat L R J. Influence of pressure on conformational changes of soybean proteins[J]. Agric Food Chem, 1978, 41:2 250

8 Hanh V. Major proteins of soybean seeds. A straightforward fraction and their characterization[J]. J Agric Food Chem, 1976, 24:1 117

The Effect of Ultrasonic Treatment on the Superficial Property of Soybean Protein

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ABSTRACT The effect of superficial property of soybean protein after ultrasonic treatment were studied. As ultrasonic time or ultrasonic power increased, the surface tension value of the soybean isolated protein(SPI) decreased, however, the surface hydrophobity value of SPI was increased remarkably. After sonication, the emulsification capacity and the foam ability of SPI were improved, and the emulsification stability of soybean crude 7S and 11S protein were also increased. At different ion and pH condition sonication treatment can increase the emulsification capacity than the contrast treatment.

Key words ultrasonic treatment, soybean protein, superficial property

信息窗

日本新近批准的特定保健食品

日本批准的特定保健食品已达 433 件,2004 年 8 月,批准了 7 件,主要是麒麟啤酒公司开发的以车前子种皮为功能成分的不同口味和形式的各种清凉饮料(液体或粉剂)系列。该保健饮料中含有丰富的由车前子种皮提取的膳食纤维,具有很好的调节血脂,降低胆固醇的作用。

2004 年 9 月份,批准了 10 件特定保健食品,主要是由具有整肠、降脂减肥等作用的纯低聚果糖、植物甾醇、酪乳杆菌、酪蛋白膦酸肽、难消化糊精、中链脂肪酸、乳果糖、LCL 乳酸菌等功能成分的饮料或食品。