

## **Effect of high power ultrasonic treatment on whey protein foaming quality**

### **ABSTRACT**

High power ultrasonic energy at 20%, 40% and 60% amplitude was applied on whey protein suspension at concentrations of 100, 150 and 200 g kg<sup>-1</sup> for 5, 15 and 25 min to improve its foaming quality. Ultrasound-treated whey protein suspension at 200 g kg<sup>-1</sup> showed improvement in terms of increased foaming capacity by 18%, foam stability by 35%, consistency index by 18%, storage modulus by 17%, loss modulus by 26% and viscosity by 21% compared with untreated whey protein. For maximally ultrasound-treated samples of 60% amplitude treated for 25 min, the improved whey protein foams also had a 46% increase in the number of more evenly distributed fine bubbles which had a size smaller than 0.0025 mm<sup>3</sup> as imaged using X-ray microtomography.

**Keyword:** Aeration; Foam; Ultrasound; Whey protein; X-ray microtomography