Characterisation of improved foam aeration and rheological properties of ultrasonically treated whey protein suspension

Abstract

Suspensions of 10, 15 and 20% (w/v) whey protein concentrate (WPC) were treated with 20 kHz ultrasound for 5, 15 and 25 min at an amplitude of 20, 40 or 60%. The treated suspensions were whipped into foam and the aeration and rheological properties were investigated. With increasing ultrasound amplitude and treatment time, whey protein foam at 15% concentration produced the highest foaming capacity, while foam stability, storage modulus, loss modulus, consistency index and viscosity of foam increased with protein concentration. Foam viscosity correlated with foam stability with $R2 = 0.7425$ and significant at $P < 0.001$.

Keyword: Whey protein concentrate; Rheology; Ultrasonics; Viscosity