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Application of lysozyme in formation of multilayer emulsion containing caseinate

Master of Food Technology

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Contents

1. Abstract

The properties of oil-in-water emulsions stabilized by caseinate-lysozyme complexes were investigated. Complexes were prepared by the mixture of 0.8 wt.% sodium caseinate with various amounts of lysozyme (0-0.5% W/W) at neutral pH. The emulsions formed by the serum solutions were not stable at low lysozyme concentrations (0-0.2 % W/W), but were stable at high concentrations (0.3-0.5 % W/W). The effects of lysozyme on caseinate-stabilized O/W emulsions were studied. Multilayer emulsions (containing 0.4 wt.% caseinate and 0-0.5 wt.% lysozyme) were created by mixing a primary caseinate stabilized emulsion with lysozyme solutions. The emulsions were evaluated at pH 3.3 and 6.8. At neutral pH, the emulsions were stable in the initial presence of 0.1 wt.% lysozyme due to bridging flocculation, but unstable at high lysozyme concentration of 0.1-0.5 wt.% . In acidified emulsions, lysozyme had no effect on caseinate-stabilized emulsions. Therefore, at neutral pH, complexes formed with high caseinate-lysozyme ratio could not create stable emulsions. On the other hand, caseinate-stabilized emulsions could only stay stable when the lysozyme to caseinate weight ratio was 1:2.

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