

# Functional Properties of Dephosphorylated Bovine Whole Casein

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Native whole casein and dephosphorylated (40 and 93%) whole caseins were evaluated for solubility between pH 3 and 8, Ca<sup>2+</sup> sensitivity, emulsion capacity, emulsion stability, foaming capacity, and foam stability. The isoelectric point of the modified caseins shifted upward (.5 pH units for 93% dephosphorylated casein) as the degree of dephosphorylation increased. Caseins in NaCl solutions were equally soluble above their isoelectric points. Dephosphorylated caseins were more soluble in NaCl at pH 3 and in the presence of Ca at pH 7. Emulsifying properties were dependent on the amount of casein in solution and were greatest at the pH at which caseins were most soluble. Emulsions made with modified caseins were similar to native casein emulsions in initial turbidity and emulsion activity index values but had lower oil capacities and tended to be less stable. Dephosphorylated caseins formed less foam volume during sparging, and the foam was very unstable. The removal of the phosphate groups from whole casein improved its solubility and reduced emulsion and foaming properties in ways that may be of value to the food industry.

Key Words: dephosphorylated casein • calcium sensitivity • emulsion • foam

Submitted on October 26, 1992

Accepted on June 17, 1993

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