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Contr. talk - Dephosphorylation of the casein micelle

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Dephosphorylation of caseins has been evaluated on their monomeric forms, and dephosphorylation extents up to nearly 100% have been reported. However, the effect of dephosphorylation on casein micelles has yet to be fully understood. The aim of this work is to study the dephosphorylation of the native casein micelle under native
and dissociating conditions to determine the kinetics of micellar dephosphorylation and to study the micellar structure as a function of its phosphorylation degree. We hypothesize that the structure of the casein micelle is the limiting factor when enzymatically dephosphorylating it. To test the hypothesis, dephosphorylation, by Calf Intestinal Phosphatase and Potato Acid Phosphatase, is conducted under varying conditions, and the degree of dephosphorylation compared. The structural changes affecting the micelle are then evaluated by determining differences in micellar protein composition, particle size by light scattering, and structural analysis using SAXS, to study possible changes to the outer and inner structure of the casein micelle before and after dephosphorylation treatment. This work allows to further elucidate the organization of the casein micelle, by determining the accessibility of the enzyme within the supramolecular structure, and under which conditions we see specific changes in the pattern of dephosphorylation.

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