



Aqueous two-phase partition of complex protein feedstocks derived from brain tissue homogenates

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Abstract

This study describes the application of aqueous two-phase partition using polyethylene glycol (PEG)-potassium phosphate systems for the direct recovery of proteins, and aggregates thereof, from mammalian brain tissue homogenates. Investigation of established methodologies for the purification of prion proteins (PrP) from bovine brain affected with transmissible spongiform encephalopathy (BSE) has identified an alternative purification regime based on aqueous two-phase partition. This circumvents energy-intensive and rate-limiting unit operations of ultracentrifugation conventionally used for isolation of PrP. Selectivity of various PEG-phosphate systems varied inversely with polymer molecular mass. The maximum protein recovery from bovine brain extracts was obtained with systems containing PEG 300. Manipulation of the aqueous environment, to back-extract