

**Differences between Chemical and Physical Disulfide Blocking of
Whey Proteins Aggregates. Investigation Using Dilute Solution
Viscometry**

Running Title “Chemical and Physical Blocking of Disulfide Bonds in Whey Proteins”

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ABSTRACT

Thermal aggregation of whey proteins has been the topic of extensive research work. Blocking of disulfide bonds is quite important for the understanding of aggregation mechanism and, specifically, the role of disulfide interchange reaction. In this work, chemical blocking of disulfide bonds by Dithiothreitol (DTT) was compared with physical blocking (at pH 3), when molecules at both conditions were subjected to thermal aggregation at 80 °C for 1 hr. Results indicate differences in molecular properties at the two aggregation conditions. Aggregates that were formed via thermal treatment in the presence of chemical blocking reagents (DTT) produced larger aggregates of spherical, less ordered, collapsed macromolecules. However, aggregate formed when disulfide bonds were physically blocked – at pH 3- produced smaller aggregates of spherical, ordered, wormlike macromolecules.