

from conformational changes at extremes of pH. However, at pH 6.4, there should have been little hydrolysis and yet the activity loss was significant. It was hypothesized that the crystallization of the dibasic sodium phosphate salt led to a large decrease in pH resulting in generation of glucose. Accompanying the large loss in activity for the pH 6.4 sample was a large increase in the amount of aggregate as determined by SEC and SDS PAGE. The latter assay demonstrated the covalent nature of the linked aggregates. Thin layer chromatography conclusively showed the generation of glucose in samples freeze-dried from a sodium phosphate buffer system at pH 6.4 (Townsend & Deluca, 1988). Thus, selection of pH with an appropriate buffer system that does not result in a decrease in pH upon freezing is crucial for successful freeze-drying.

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