

Comparative Survival Rates of Yeasts during Freeze-Drying, Traditional Drying and Spray Drying

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Abstract : The effect of three methods of drying (traditional drying, freeze-drying and spray-drying) on the survival of concentrated cultures of *Geotrichum fragrans* and *Wickerhamomyces anomalus* was studied. The survival of yeast cultures was initially compared immediately after freeze-drying using HES 12%(w/v)+Sucrose 7% (w/v) as protectant, traditional drying in dry rice cakes and finally spray-drying with whey proteins. The survival of *G. fragrans* and *W. anomalus* was studied during 4 months of storage at 4°C and 25°C, in the darkness, under vacuum and at 0% relative humidity. The results demonstrated that high survival was obtained using traditional method of preservation in rice cakes (60% for *G. fragrans* and 65% for *W. anomalus*) and freeze-drying in (68% for *G. fragrans* and 74% for *W. anomalus*). However, poor survival was obtained by spray-drying method in whey protein with 20% for *G. fragrans* and 29% for *W. anomalus*. During storage at 25°C, yeast cultures of *G. fragrans* and *W. anomalus* preserved by traditional and freeze-drying methods showed no significant loss of viable cells up to 3 months of storage. Spray-dried yeast cultures had the greatest loss of viable count during the 4 months of storage at 25°C. During storage at 4°C, preservation of yeasts cultures using traditional method of preservation provided better survival than freeze-drying. This study demonstrated the effectiveness of the traditional method to preserve yeasts cultures compared to the high cost methods like freeze-drying and spray-drying.

Keywords : freeze-drying, traditional drying, spray drying, yeasts

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