Influence of Freezing and Thawing Techniques on Stability of Sago and Tapioca Starch Pastes

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The freeze-thaw stability of sago and tapioca starches have been studied by freezing starch gels (pastes) at -18°C for 22 h and then thawing at 30°C, 60°C and 90°C in a water bath or at boiling temperature in a microwave oven. This freeze-thaw stability was observed for 5 cycles. It was found that starch paste thawed at high temperature had a syneresis value (percentage of water separation) lower than that thawed at low temperature. Sago starch gave higher syneresis values than tapioca starch. Moreover, when tapioca starch gel was frozen by the cryogenic quick freezing (CQF) method and thawed at 30°C, 60°C, and 90°C in a water bath or at boiling temperature in a microwave oven for 5 cycles, no separation of water was detected in any cycle, so that the percentage of syneresis was zero. It was also found that sago starch gel frozen by the CFC method, had a lower percentage of syneresis than that frozen at -18°C in every freeze-thaw cycle.