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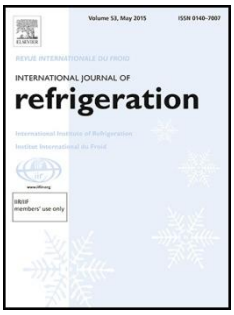

Title: A study of ice crystal development in hairtail samples during different freezing processes by cryosectioning versus cryosubstitution method.

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A study of ice crystal development in hairtail samples during different freezing processes by cryosectioning versus cryosubstitution method.

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Highlights

- Cryosections enabled facile and rapid observation of ice crystals.
- Higher freezing rate produced smaller and regular ice crystals in frozen hairtail.
- Small crystals cause little damage to muscles with higher water holding capacity.

Abstract

Hairtail samples were frozen by three different treatments, including conventional air freezing (CAF) at -20 ^{o}C, refrigerator cryogenic freezing (RCF) at -80 ^{o}C and liquid nitrogen immersion freezing (LIF) at -196^{o}C. In order to investigate the influence of freezing treatments on the development of ice crystal in hairtail samples, an improved method based on cryo-section was applied to observe the formation of ice crystals in frozen hairtail meat, comparing with the traditional method of cryo-substitution. Results showed that cryosectioning was a highly effective tool for intuitionistic view