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Ice Cream Structure Modification by Ice- Binding Proteins

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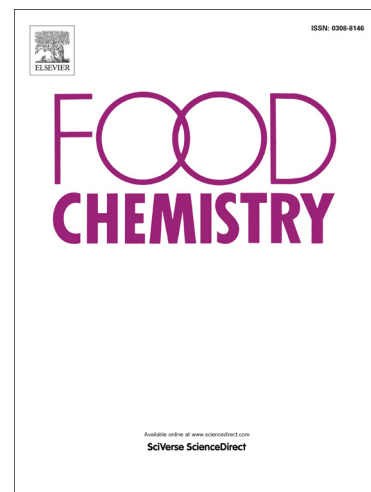
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# 1 Ice Cream Structure Modification by Ice- 2 Binding Proteins

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## 8 Keywords

9 ice-binding protein (antifreeze protein); ice recrystallization inhibition; ice cream microstructure;

## 10 Abstract

11 Ice-binding proteins (IBPs), also known as antifreeze proteins, were added to ice cream to  
12 investigate their effect on structure and texture. Ice recrystallization inhibition was assessed in  
13 the ice cream mixes using a novel accelerated microscope assay and the ice cream  
14 microstructure was studied using an ice crystal dispersion method. It was found that adding  
15 recombinantly produced fish type III IBPs at a concentration  $3 \text{ mg} \cdot \text{L}^{-1}$  made ice cream hard and  
16 crystalline with improved shape preservation during melting. Ice creams made with IBPs (both  
17 from winter rye, and type III IBP) had aggregates of ice crystals that entrapped pockets of the  
18 ice cream mixture in a rigid network. Larger individual ice crystals and no entrapment in control

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