

Hydrophobins , beer foaming and gushing

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Abstract

Hydrophobins belong to the most important proteins produced by filamentous fungi. They are surface active and their foaming potential is due to the presence of particular spatial arrangements of hydrophobic and hydrophilic amino acids. However, their presence eventually leads to overfoaming of beers. In beers and other liquids hydrophobin molecules aggregate around hydrophobic carbon dioxide molecules and form nano-structures, containing entrapped carbon dioxide. By pressure release at opening a bottle of beer, the nano-structures behave as nano-bombs. This explosion causes a sudden release of gaseous carbon dioxide, which is gushing. Several solutions to avoid or to reduce gushing, have been proposed, among which beer pasteurization and the effects of hop components have been studied. This review discusses the nature of hydrophobins, the foaming phenomenon and gushing.