

METHODS OF IMPROVING FREEZING RESISTANCE OF BAKER'S YEAST

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Frozen dough technology is widely used and could effectively extend the shelf life of bread by ensuring its freshness. However, a variety of issues, including the restriction of yeast activity and damage to the dough structure, may arise during the production and storage of frozen dough, ultimately resulting in a loss of quality. After fermentation, the bread's ability to retain CO₂ and the yeast's ability to produce CO₂ determine the quality of the frozen dough. Ice crystals are thought to be the primary cause of both decreased yeast viability and the breakdown of the dough network structure, which two significant elements are contributing to the decline in dough quality. Several factors affect yeast's resistance to freezing and thawing, such as its physiological state before freezing; for instance, yeast cells in growth standstill are more resistant to freezing than those in the exponential growth phase. Numerous strategies and methods have been developed to increase the freezing resistance of baker's yeast and, consequently, the quality of frozen dough. These strategies include the addition of additives like hydrocolloids and antifreeze proteins (AFP), genetic engineering, optimizing the freezing time and storage conditions, and developing new freezing technologies like ultrasonic freezing. The paper summarizes these methods for improving the freeze resistance of baker's yeast.