

## The effect of $\alpha$ -, $\beta$ - and $\gamma$ -cyclodextrin on wheat dough and bread properties.

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Cyclodextrins (CDs) are cyclic oligosaccharides that have found widespread application in numerous fields. CDs have revealed a number of various health benefits, making them potentially useful food supplements and nutraceuticals. In this study, the impact of  $\alpha$ -,  $\beta$ -, and  $\gamma$ -CD at different concentrations (up to 8% of the flour weight) on the wheat dough and bread properties were investigated. The impact on dough properties was assessed by alveograph analysis, and it was found that especially  $\beta$ -CD affected the viscoelastic properties. This behavior correlates well with a direct interaction of the CDs with the proteins of the gluten network. The impact on bread volume and bread staling was also assessed. The bread volume was in general not significantly affected by the addition of up to 4% CD, except for 4%  $\alpha$ -CD, which slightly increased the bread volume. Larger concentrations of CDs lead to decreasing bread volumes. Bread staling was investigated by texture analysis and low field nuclear magnetic resonance spectroscopy (LF-NMR) measurements, and no effect of the addition of CDs on the staling was observed. Up to 4% CD can, therefore, be added to wheat bread with only minor effects on the dough and bread properties.

### Słowa kluczowe

cyclodextrins, alveograph, wheat dough, bread staling

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