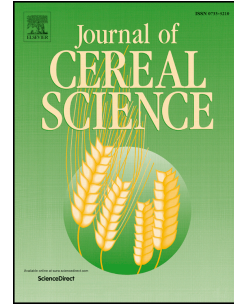


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Cellular structure and rheological properties of shaped fermented wheat flour dough

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1 Cellular structure and rheological properties of shaped fermented wheat flour dough

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9 **Abstract :**

10 Among the various operations of the breadmaking chain, the impact of shaping on dough
11 cellular structure has scarcely been studied. In this work, wheat flour dough has been
12 laminated under different roll gap conditions $\delta(\text{mm}) = (2,5, 10, 20, \infty)$. Rheological properties
13 were measured under large and small strains, by lubricated squeezing flow test and dynamic
14 thermomechanical analysis, respectively. Laminating has a limited effect on the elongational
15 viscosity of the dough. However, the minimum value of the ratio of storage modulus reached
16 for gap $\delta=5\text{mm}$ suggests that gluten network structuration is improved in this case. The
17 kinetics of porosity and shape ratio of fermenting laminated doughs were calculated from
18 image analysis of dough follow-up during proofing. They showed that stability is improved
19 for $\delta=5\text{mm}$. Finally, Xray tomography experiments, performed on laminated rolled dough
20 during proofing, confirmed that the main changes can be attributed to an increase of cellular
21 homogeneity at $\delta = 5\text{mm}$, reflected by lower median gas cell size and less spread size
22 distributions.

23

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