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## Effects of L-Ascorbic Acid and Superoxide Anion Radical on the Polymerization of Wheat Flour Protein

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L-Ascorbic acid (AsA) plays an important role in the rheological properties of bread dough. Protein was extracted from the wheat flour or dough using sodium dodecyl sulfate buffer with sonication, and was separated by size-exclusion high-performance liquid chromatography into 5 fractions on the basis of molecular weight. When the dough was prepared from flour by mixing with water, the relative area of fractions 1 and 2 (molecular weights were more than 130,000) increased, while that of fractions 3 and 4 (molecular weights were 20,000-130,000) decreased. Furthermore, the relative area of fractions 1 and 2 extracted from AsA added dough, and from the dough with the superoxide anion radical ( $O_2^-$ ) generation system increased. Thus, it was suggested that the  $O_2^-$  produced during the autoxidation of AsA affect the polymerization of flour protein in dough.

**Keywords:** [L-ascorbic acid](#), [superoxide anion radical](#), [wheat protein](#), [sulfhydryl-disulfide exchange](#), [polymerization](#)


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