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ONLINE ISSN : 1881-3984

PRINT ISSN : 1344-6606

Food Science and Technology Research

Vol. 7 (2001) , No. 3 pp.220-223

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Effects of L-Ascorbic Acid and Superoxide Anion Radical on the Polymerization of Ovalbumin

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(Received: December 25, 2000)

(Accepted: June 22, 2001)

L-Ascorbic acid (AsA) plays an important role in food, especially in the rheological properties of bread dough. So in this study, we estimated the effect of AsA on the polymerization of proteins using ovalbumin (OVA). OVA was separated into 4 fractions by size-exclusion high-performance liquid chromatography (SE-HPLC) on the basis of molecular weight. When the OVA was incubated at 55°C, the relative areas of fraction 1 (molecular weight of more than 350,000) increased. The relative area of fraction 1 of OVA added with AsA, and of the OVA with superoxide anion radical (O_2^-) generating system was increased. Furthermore, the remaining sulfhydryl group content in OVA with the O_2^- generating systems showed a significant decrease from control. Thus, it was suggested that the O_2^- produced during the autoxidation of AsA might react with the sulfhydryl groups, and consequently affect the polymerization of OVA.

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

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Effects of L-Ascorbic Acid and Superoxide Anion Radical on the Polymerization of Ovalbumin Mikako NAKAMURA and Tadao KURATA, *FSTR*. Vol. 7, 220-223. (2001) .

doi:10.3136/fstr.7.220

JOI JST.JSTAGE/fstr/7.220

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