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## The Use of Ascorbic Acid to Promote the Polymerization of 11S Globulin

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We investigated the effects of L-ascorbic acid (AsA) on 11S globulin, which was reduced by 2-mercaptoethanol. Sodium dodecyl sulfate-polyacrylamide gel electrophoresis analysis verified that AsA promoted the polymerization of 11S globulin via the formation of disulfide bridges. The generation of thiyl radicals ( $S\cdot$ ) in 11S globulin was examined by electron spin resonance spectroscopy coupled with spin trapping. The superoxide anion radical ( $O_2^-$ ) was produced by the photoactivation of riboflavin. A typical line shape was observed for  $S\cdot$ . Staining with nitroblue tetrazolium dye confirmed that  $O_2^-$  was produced in the 11S globulin solution due to the autooxidation of AsA. Although the 11S globulin lacking AsA did not yield a rigid gel, the sample containing AsA successfully yielded a rigid gel. Thus, it is clear that  $O_2^-$  generated during AsA oxidation exerts beneficial effects on 11S globulin in its reduced form.

**Keywords:** [vitamin C](#), [polymerization](#), [11S globulin](#), [superoxide anion radical](#), [electron spin resonance \(ESR\)](#), [thiyl radical](#), [disulfide \(SS\) bridges](#)



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