

**Title** Oxidation and peroxidation of postharvest banana fruit during softening  
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#### **Abstract**

Softening is a characteristic of fruit ripening caused by oxidative action. The oxidized degree of membrane lipids and proteins in relation to production of reactive oxygen species (ROS) of postharvest banana fruit during softening were investigated. Firmness as an indicator of softening of banana fruit was also measured. Banana fruit firmness decreased markedly after 4 days of storage, which indicated the occurrence of fruit softening. The contents of malondialdehyde (MDA) and protein carbonyl after 3 days and lipofuscin content after 4 days of storage increased markedly, which exhibited that the accumulation of lipofuscin appeared later than that of MDA and protein carbonyl which could be associated with the late softening stage. Hydroxyl radical level and hydrogen peroxide content decreased within 3 days and then increased significantly. However, production of superoxide anion radical decreased within 2 days, then maintained a low level, and finally increased significantly after 5 days of storage. It was apparent that the marked increases of hydroxyl radical and hydrogen peroxide contents of banana fruit appeared prior to the time of fruit softening and the accumulations of MDA, protein carbonyl and lipofuscin. This study suggested that enhanced production of hydroxyl radical and hydrogen peroxide could participate in the formation of oxidative products and then involve the initiation of banana fruit softening.