**Title** Inhibition of polyphenol oxidase and peroxidase activities on fresh-cut apple by simultaneous treatment of ultrasound and ascorbic acid

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**Abstract**

The effects of ultrasound and ascorbic acid on activity changes of polyphenol oxidase and peroxidase, of fresh-cut apple during storage, were investigated. The combined treatment of ultrasound and ascorbic acid inactivated monophenolase, diphenolase, and peroxidase, whilst the individual treatment of ultrasound or ascorbic acid had inverse and limited inhibitory effect on the enzymes. The main protein bands had a molecular weight of approximately 63 kDa. A diffuse band, lacking the electrophoretic mobility of proteins, was observed after combined treatment. This investigation revealed that simultaneous treatment with ultrasound and ascorbic acid had synergistic inhibitory effects on several enzymes related to enzymatic browning.