

Title Growth inhibition by gamma rays affects lipids and fatty acids in garlic sprouts during storage
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Abstract

Bulbs of cv. Colorado garlic were irradiated at dormancy with a dose of 60 Gy of gamma rays and stored for 8 months, during which period the content and fatty acid composition of phospholipids (PL), glycolipids (GL) and neutral lipids were analyzed on three occasions. No significant changes were observed a few hours after irradiation, but the treatment resulted in a considerable reduction in lipid and fatty acid content 150 and 240 days post-harvest, with a concomitant reduction in the process of sprout growth. In total lipid, all fatty acids including the major linoleic acid (18:2) decreased, the largest decrease being in linolenic acid (18:3). The latter was a relatively minor component of PL (phosphatidylcholine and -ethanolamine) and a major acyl group of GL (monogalactosyl- and digalactosylglycerol). Radioinhibition had the opposite effect on polyunsaturated fatty acids of PL and GL, the 18:3/18:2 ratio decreasing in the former and increasing in the latter. Accretion of lipids and fatty acids is a normal biosynthetic process accompanying sprout growth, and the long-term effects of irradiation are interpreted to reflect a delay or slowing down of such process.