EVOLUTION OF LIPOXYGENASE ACTIVITY DURING STORAGE OF POTATO TUBERS (*SOLANUM TUBEROSUM* L. cv. BINTJE)

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The lipoxygenase pathway is a cascade of enzymatic reactions that catalyses the transformation of fatty acids into a wide range of compounds involved in essential physiological processes in plants. Lipase hydrolyses lipids furnishing free fatty acids afterwards, lipoxygenase (E.C. 1.13.11.12) catalyses the addition of molecular oxygen on polyunsaturated fatty acids containing a (*Z*)-1, (*Z*)-4-pentadiene structure, mainly linoleic and linolenic acids in plants. Depending on botanical origin and on reaction conditions, variable amounts of 13 and or 9-hydroperoxides of fatty acids are formed by lipoxyganase. The hydroperoxides can be transformed enzymatically or not in a variety of molecules (e.g. jasmonic acid, traumatic acid, green note aldehydes and alcohols, colneleic and colnelenic acids). The fatty acids hydroperoxides can also be reintegrated in the membranes decreasing its flexibility. In potato tubers, the main lipoxygenase isoform is Lox-1 which forms mainly 9-hydroperoxides. Lipoxygenase, a key enzyme in lipid peroxidation, has been extensively studied but little is known about its implication during storage of potato tubers. In our study, we particularly focussed on the determination of lipoxygenase activity during storage of potato tubers (*Solanum tuberosum* L. cv. Bintje stored at 2 °C during 10 months). The presence of lipoxygenase was determined in two different ways: by measuring m-RNA content (northern blot) and by determining lipoxygenase activity in potato tuber extracts. The same potato samples were submitted to reducing sugars and fatty acids profile determination to evaluate changes occasioned by the storage at low temperature. Our experiments reveal that lipoxygenase activity clearly increases at the beginning of storage (58 days after harvesting) and also after a long period of storage (249 days after harvesting). This last result is correlated with *lox-1* m-RNA level for the end of the storage period but not for the beginning. During the storage, reducing sugar concentration increases while double bound index decreases revealing membrane damages.