Title Differences in suberin content and composition between two varieties of potatoes (*Solanum tuberosum*) and effect of post-harvest storage to the composition

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Abstract

The waterproof defence barrier of the potato (*Solanum tuberosum)* tuber periderm consists of the suberized cells of phellem. The distinct polyaliphatic and polyaromatic domains of suberin have separate roles in the development of resistance to infections. The aliphatic suberin composition and changes in the amounts of peel and extractive free suberized membrane i.e. raw suberin were studied in two potato varieties, Nikola and Asterix, during post-harvest storage for one year. The amount of peel increased from 2.33 to 4.80 g/kg in yellow-skinned Nikola and from 3.50 to 5.54 g/kg in red-skinned Asterix. The raw suberin fraction accounted for 258.1 ± 16.6 mg/g in the peel of Nikola and 250.7 ± 36.3 mg/g in the peel of Asterix on average during the storage period. In addition to increase in suberin up to 6 months, the microscopic images of the peel and raw suberin indicated that the other components contributed to the peel mass increase. The $CHCl_3$-soluble suberin monomer fraction after methanolysis accounted for about 20% of the raw suberin in both varieties, indicating a constant ratio of suberin polyaliphatic and polyaromatic domain over the storage period. α,ω-Diacids, fatty acids and aromatic compounds were more abundant in Asterix, while ω-hydroxyacids and fatty alcohols were more abundant in Nikola (all $p = 0.000$). Small changes in the aliphatic monomer composition within each variety were seen during storage.