

Comparison of wound healing abilities of four major cultivars of potato tubers in China

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Abstract

Wound healing ability of potato tubers depends on cultivar. However, there are few researches on the wound healing dynamics of different potato cultivars and reports at biochemical and cellular level. In this study, the healing ability among four major potato cultivars, 'Atlantic', 'Shepody', 'Desiree' and 'Favorite' is compared after wounding the tubers artificially. The results indicated that during healing the wounded tubers 'Atlantic' had the lowest weight loss and disease index, compared with 'Shepody', 'Desiree' and 'Favorita' which was the highest. 'Atlantic' also had the largest accumulation of suberin poly phenolic and lignin at wounded sites of tubers during healing, followed by 'Shepody' and 'Desiree', and accumulation of 'Favorita' was the least. Moreover, 'Atlantic' had the highest phenylalanine ammonialyase and peroxidase activities, total phenols, flavonoid and lignin contents, and ABTS⁺ scavenging ability in the tissue of wound sites during healing, followed by 'Shepody', 'Desiree' and 'Favorita'. It is suggested that wound healing ability of potato tubers of different cultivar is strongly affected by the activation of phenylpropanoid metabolism and peroxidase.