

Title The role of the anatomical structure of apple fruits as fresh cut produce
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Abstract

The anatomical structure of apple fruits plays an important role in fresh cut produce. Our research has shown that the epidermis consists of several cell layers whose tangent diameter exceeds the radial one, lower epidermis cells being of larger size. A fruit surface is covered with cutin, which consists of lipid acids such as trioxystearine, oxystearine and dioxypalmitin. A layer of soft wax is located under cutin, and firm wax grains are on an uneven surface. The analysis of the cuts and surface of the apple fruits shows that dense sub-epidermal tissue is developed in external layers; its cells have thick walls and form “a skin”. Varieties such as ‘Mantuanske’ (350 μm), ‘Rubinove Duky’ (220 μm), ‘Jonathan’ (180 μm) have especially thick layer. ‘Golden Delicious’ fruits have the thinnest “skin” (about 110 μm); in fact cuticular layer is not observed, soft wax layer is uneven with a great number of gaps. Certain thickening is observed in cell walls of ‘Idared’ apple skin (up to 6 μm). The analysis of the parenchyma structure of apple fruits (varieties of the Forest Steppe Zone of Ukraine) shows that its structure depends on the pomological variety. Thus, parenchyma of varieties such as ‘Idared’, ‘Mantuanske’ and ‘Jonathan’ consists of cells whose size ranges from 10 to 110 μm , dense inter-cell spaces, and no gaps among cells (at a harvesting stage); so such fruits have pungent flavor. Parenchyma of pomological varieties ‘Golden Delicious’ and ‘Melrose’ has both small (5-10 μm) and large (over 100 μm) cells; it also has tiny cells (up to 5 μm) which are situated in inter-cell spaces. Due to such structure and the availability of inter-cell spaces, filled with air, fruit parenchyma has soft flavor.