

SEM studies on the morphology of 'White Pulp' dragon fruit

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Abstract

Dragon fruit (*Hylocereus undatus*) is one of the new focuses for the next source of nutritional composition in Thailand. It is a good source of dietary fiber, β -carotene, magnesium, calcium, potassium mucilage, and total phenol. However, dragon fruit rapidly loses visual quality due to chlorophyll degradation of the bract or scales. Thus, the study of yellowing in the bract of dragon fruit is very important in solving the problem of loss due to yellowing. To understand the cause of bract yellowing, morphology of the fruit peel and bract were studied. At different stages of fruit development (10, 20, 30, and 40 d after anthesis), both peel and bract were sampled and observed with Scanning Electron Microscopy (SEM) at 100x. Both were evaluated for density of the stomata. The results showed that the bract of dragon fruit at all stages of fruit development showed significantly higher density of stomata than that of the fruit peel, by about 3-4 times. As a result, water transpired via the stomata located on the bract faster than the fruit peel. Thus, bract of dragon fruit showed rapid loss of visual quality and became unacceptable. Moreover, differences in the morphology of the fruit tissue could be related to changes at the physiological level in dragon fruit at different stages of fruit development.