

## **Effect of Some Partial Processes Related to Photosynthesis on Peelability of the Cinnamon Bark**

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The peelability (detachability) of cinnamon bark changes with weather, maturity of the stem and growth stage of the plant. However, the physiological reasons behind the peelability is not understood. The present study was conducted as two experiments. Experiment I determined the relationship between peelability of cinnamon, and some related physiological and partial processes of photosynthesis. Following stages of cinnamon were considered as treatments: fruiting plants with dark green leaves, fruiting plants with light green leaves, flowering plants with dark green leaves, flowering plants with light green leaves, flowering plants with dark green leaves (but no flowers in the given branch), plants with no flowers or fruits. Peelability of cinnamon stems (measured as the force required to remove bark), fluorescence parameters, leaf water potential, hydraulic conductivity of the cinnamon sticks and mucilage content of cinnamon barks were measured. Experiment II examined the relationship between the leaf anthocyanin content and some fluorescence parameters in cinnamon leaves of different growth stages. There were significant ( $P<0.05$ ) differences between the treatments in the force required for peeling the bark, fluorescence parameters, mucilage content, hydraulic conductivity and leaf water potential. The force required to detach bark had significant ( $P<0.05$ ), positive correlations with fluorescence parameters (Performance index ( $R^2=0.7552$ ),  $F_v/F_m$  ( $R^2=0.6367$ )) and mucilage content ( $R^2=0.645$ ) and significant ( $P<0.05$ ) negative correlation with the leaf water potential ( $R^2=0.3421$ ), but no significant correlation ( $P<0.05$ ) with the hydraulic conductivity. Leaf anthocyanin content positively correlated with absorbance, trapping, and electron transport per reaction center, while light green leaves appeared to be more efficient photosynthesizers. Cinnamon bark peelability appears to be negatively correlated with primary metabolism and the products, indicating possible involvement of secondary metabolic products such as mucilage in peelability.

**Keywords:** Hydraulic conductivity, Leaf water potential, Mucilage content, Peelability of cinnamon, Photosynthesis

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