Title Physico-chemical and biochemical changes of *Annona squamosa* l and *Spondias citheraea* sonner fruits during postharvest

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Abstract

The aim of this study was to determine some physical, chemical and biochemical changes during *Annona squamosa* and *Spondias* citheraea *L* fruits ripening in order to stimulate mass production of this item under-utilized in Venezuela and is likely to be established as a crop in our country, as their relative *Annona muricata* and *Mangifera indica* are. It was carried out physical analysis such as fresh weight, firmness, specific gravity and chemical analysis such as toml chlorophyll, total carotenoids, soluble solids and titrable acidity. Biochemical determinations were made of pectinmethylesterase enzymes, polygalacturonase, cellulase and polifenoloxidase activity in crude extracts in *Annona squamosa* and a anionic peroxidase enzyme was purified in Spondias citheraea fruits utilizing several steps of purification, namely, precipimtion with acetone, chromatography on DEAE cellulose column, column chromatography on Sephadex G-100 and polyacrylamide gel electrophoresis. Experimental design was completely randomized and was carried out analysis of variance and Tukey tests. In *Spondias citherea* fruits total chlorophyll decreasing was more marked in later stages of ripening. Total soluble solid contents increased as the fruits ripen, while the acidity expressed % of citric acid decreased during fruits ripening. Pectinmethylesterase enzyme activity deacresed as the fruit ripened while the enzyme polygalacturonase increased Cellulase enzyme activity was variable but tended to increase during ripening. Activity ofthe enzyme polyphenoloxidase, associated with pulp browning, was higher in the last stages of ripening ofthese fruits. Results confirmed the high degree of perishability of *Annona squamosa* fruits under experimental conditions (28 + / - 2 Celsius degree and 60-70% RH). Spondias citherea fruit pulp has a high degree of lignification that could be correlated with activity of peroxidase enzyme. This enzyme acts on the chatecol (phenolic compound) in a reaction of peroxidation and not oxidacion. Also shows activity on syringaldehyde (compound analogous to precursors of lignin synthesis) which indicates a probable relationship of this anionic peroxidase enzyme to lignifIcation in these fruits.