Abstract
Averrhoa carambola fruit represents a potential as an agro-industrial production line. A restriction on the use of this exotic fruit is the susceptibility to enzymatic browning, affecting nutritional and visual acceptance. The aim of this study was to determine the physical and chemical composition of A. carambola at three stages of maturity. The polyphenol oxidase enzyme has also been characterized on the fruits and juices. Also, the enzymatic effect on the ripening stages and the fruit juices flow behavior were equally determined using different rheological models. The increasing in degrees Brix (unripe (UR) 6.63 ± 0.25, intermediate (IN) 6.8 ± 0.10 and ripe (R) 8.26 ± 0.37) and the decreasing of the pectinic content (UR 4.35% ± 0.98, IN 3.6% ± 1.26 and R 2.25% ± 0.76) could be considered as indicators of fruit ripening. The protein content and levels of organic acids decreased during the ripening of fruit was observed, indicate a high metabolic rate during this process. For all stages, the polyphenol oxidase exhibited a maximum activity at pH 8 and 40 °C. In the fruit aqueous fraction, the enzyme would be an appropriate indicator in industrial handling (temperatures below 20 °C and pH less than 7), which would control enzymatic browning. According to the rheological study, the viscosity variation ( : UR (13.4 to 1.1), IN (15.4 to 1.4), R (69.6 to 2.9)) with temperature changes (10 to 50 °C) is adjusted to the Arrhenius equation, whereas the effect of soluble solids content on the samples viscosity was accurately described by an exponential equation. This appears to be the first work to study the rheological properties and polyphenol oxidase enzyme of A. carambola fruit in our country, the information provided from this study could be helpful to the successful development of new food functional products.

Keywords
Carambolo, Enzymatic browning, Rheology, Tropical fruits, Agroindustry, Peroxidase enzyme.