This work aimed to study the effect of different inhibitors i.e. ascorbic acid, cysteine and citric acid and some amino acids i.e. glycine, valine, methionine and phenylalanine on inhibition of polyphenol oxidase (PPO) activity mainly responsible for browning process in fresh-cut fruits and vegetables. Also identifying the mechanisms of each inhibitor under various conditions. The results confirmed that ascorbic acid and cysteine act as competitive PPO inhibitor at low concentrations (0.84-7.15mM) and react at high concentrations (1.5%) in the assay solution with the resulted quinone to form a colorless adducts (cysteine) and reduction the quinone to diphenole while citric acid worked only as non-competitive inhibitor. Identification the mechanisms of each ascorbic acid and cysteine inhibitors under various conditions. Also, this study was conducted on oxidative stress by factors affecting anthocyanin color changes (pH, PPO and hydrogen peroxide). The UV-Vis spectra of extract anthocyanins were recorded to find the suitable pH for preserving the color. However, for inhibition of fresh-cut okra dipped in 0.5% solution of cysteine, ascorbic or calcium chloride for 5 min.