**KINETIC PROPERTIES AND METAL ION STABILITY OF THE EXTRACELLULAR NARINGINASE PRODUCED BY *ASPERGILLUS FLAVUS* ISOLATED FROM DECAYING *CITRUS MAXIMA* FRUITS**

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**ABSTRACT**

Important fungal species *Aspergillus flavus* has a worldwide attention for its industrial use and toxigenic potential. It is capable of producing diverse group of enzymes including lipase, xylanse, α amylase and naringinase. Naringinase is a biotechnologically important enzyme and has potential application in food and pharmaceutical industries. Naringinases that show better stability in acidic pH and low temperatures are highly preferred in food industries. This study was aimed to characterize and determine the kinetic properties of the crude naringinase enzyme produced by *Aspergillus flavus* isolated from *Citrus maxima* fruit. The crude naringinase enzyme from *Aspergillus flavus* was highly active at 45ºC and it was very stable at 40ºC and 45ºC for at least 1 hour. Highest naringinase activity was obtained at pH 4.5 but the enzyme was stable at pH 4.0 for at least one hour. The enzyme showed zero order kinetics for 10 minutes. Vmax of the crude naringinase enzyme was 4.8076 μmol/min and the Michaelis constant by Lineweaver-Burk Plot for naringin was 4.347 g/L under the conditions. Addition of 2mM of Hg2+, Cu2+ and Ba2+ decreased the naringinase enzyme activity, while addition of 2mM Na+, Mn2+, Ca2+ and Zn2+ increased the enzyme activity. The crude naringinase from *Aspergillus flavus* possesses the appropriate characteristics to be used in various industrial and biochemical applications. Acidic nature and optimum low temperature of enzyme, facilitates debittering of acidic juice without adjusting the pH and might be used to maintain nutritional and organoleptic nature of the lemon juice.

**Keywords**: *Aspergillus flavus*, *Citrus maxima,* debittering, naringinase, kinetic properties, Michaelis constant

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