

**COMPARISON OF APPLICATION RESPONSE SURFACE METHODOLOGY AND
TAGUCHI METHOD, IN THE OPTIMIZATION OF EXTRACTION OF NOVEL
PECTINASE ENZYME, DISCOVERED IN RED PITAYA
(*HYLOCEREUS POLYRHIZUS*) PEEL**

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ABSTRACT

Peels from plant might be a likely origin of novel pectinases for use in industrial applications, due to their broad substrate specificity, with high stability under extreme conditions. Here, different plan was used to check whether the optimization of pectinase enzyme is achieved or not. Comparison was made on Response Surface Method and Taguchi method, the effect of extraction variables, namely buffer to sample ratio (2:1 to 8:1, X_1), extraction temperature (-15 to +25 °C, X_2) and buffer pH (4.0 to 12.0, X_3) on specific activity, temperature stability, storage stability and surfactant agent stability of pectinase from pitaya peel was investigated. The study demonstrated that, the optimum conditions for the enzyme extraction of pectinase were more stable, with Response Surface Method than Taguchi method. The extraction from pectinase, to achieve high temperature stability (78%), specific activity (15.31 U/mg), storage stability (88%) and surfactant agent stability (83%) were done. Hence, best action to get the highest activity and stability of pectinase enzyme from pitaya peel was 5:1 buffer to sample ratio, at pH 8.0 and 5 °C.

KEYWORDS: Fruit Enzyme; Specific Activity; Temperature Stability; Storage Stability & Surfactant Agent Stability