

STABILITY AND OPTIMAL LIPOLYTIC ACTIVITY OF SONICATED *PRUNUS AVIUM* LIPASE AND ITS APPLICATION AS FAT DEGRADATION AND HYDROLYSIS OF POULTRY WASTEWATER

Hifza Akhtar¹, Muhammad Ilyas Tariq², Nasrgis Sultana³ & Ambreen Imtiaz⁴

¹Pakistan Council of Scientific and Industrial Research, Pakistan, South Asia

^{1,2,3}Department of Chemistry, University of Sargodha, Sargodha, Pakistan, South Asia

⁴Department of Biological Sciences, Forman Christian College (A Chartered University), Lahore, Pakistan, South Asia

ABSTRACT

Present work is an optimized lipolytic activity of sonicated defatted *Prunus Avium* seed lipases. The characterization and the stability of *P. avium* lipase were assayed at incremental steps of pH and temperature. Comparison of fat liberation potential of the lipases treated and untreated poultry wastewater and mutton fat showed the importance of *Avium* lipase towards fat hydrolysis. A 300W sonicated waves in 30 minutes made meal clear for enzyme extraction by removing all interference of seeds fat, evidenced by the images of scanning electron microscope. 10% olive oil emulsion; as substrate, one-hour incubation time and 4000rpm agitation speed were the optimal variables for extraction of enzyme amongst the 9 runs of experiments suggested by orthogonal L9 array design. Substrate concentration was found the actual contributor to facilitating the lipase for complete hydrolysis. A 43.19% contribution (ANOVA result) of olive oil: substrate was found responsible for maximum lipolytic activity (1.52 μ U) of *Avium* lipase at pH 6 and 40°C. Best stability of lipase was observed in *n*-heptane. A release of 6 times more poultry wastewater fat as compared to acid hydrolysis was the successful application of *P. avium* after 180 minutes of the incubation period. Degradation of lipids as increase the %age of monounsaturated acid as compared to polyunsaturated acid (GLC analysis) speculating that *P. avium* enzyme can be utilized in oil/fat, detergent and wastewater industry due to fat degradation property.

KEYWORDS: Hydrolysis, Lipolytic Activity, Orthogonal Array, *Prunus Avium*, Scanning Electron Microscope, *N*-Heptane, Sonic Waves

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