

BIOCHEMICAL CHARACTERIZATION OF MICROBIAL KERATINASES FROM ACTINOMYCETES FOR CHICK FEATHER WASTES DEGRADATION

T. Jayalakshmi¹, P. Krishnamoorthy¹, G. Ramesh kumar² and P. Sivamani³

¹ Dept of Bioinformatics, Bharath University, Chennai,
Tamilnadu - 600073, India.

² Dept of Bioinformatics, MIT Campus, Anna University, Chennai,
Tamilnadu-600044, India.

³ Microlabs, Vellore, Tamilnadu-632521, India.
jayamaniraja07@gmail.com

ABSTRACT

Keratinases are very widespread in the microbial world and they can be identified from microorganisms of the three domains: Eukarya, Bacteria and Archea. These microorganisms have been isolated from the most distinct soil habitats, including aerobic and anaerobic environments. Therefore, microbial keratinases present a great diversity in their biochemical and biophysical properties. Keratinase producers have also been described among actinomycetes mainly from *Actinomyces* and *Streptomyces* species. In addition to these species, keratinase production has been associated to an increasing number of bacteria. The biochemical properties of microbial keratinases may be diverse depending on the producer microorganism. Most of the microbial keratinases are alkaline or neutral showing optima pH ranging 7.5-9.0. The properties of microbial keratin degrading enzymes appear to differ according to the producing species of microorganism. The effect of immobilization of this enzyme was also taken into consideration as an important biotechnological aspect. The ability of actinomycetes to produce diastatic, proteolytic and oxidative enzymes is well established by biochemical characteristics and moreover excellent characteristics of crude keratinase leads to the potential application in waste treatment and recovery, poultry processing, leather industry, medicine, textiles and in cosmetic development as it showed a significant activity against many keratinaceous substrates. Based on the biochemical characterization, the keratinase producing actinomycetes were analysed and reported and it provides the basis to develop further production of these enzyme in large scale and possible uses of the enzyme preparation.

KEY WORDS: Keratin, Actinomycetes, Biochemical properties, Keratinase