Recent Advancements in Microbial Degradation of Keratin Containing Waste

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Abstract—*The consumption of chicken and other meat products by people of modernized world is increasing day by day due to technological advancement in food preparation, but at the same time led to immense release of waste. The major concern is to combat with million tons of feather waste generated from poultry processing units that is rich in keratin. Keratins are the insoluble structural proteins from feathers, wool, hooves, scales, hair, nails and stratum corneum. One of the main characteristics of keratins is that they have high mechanical stability and resistance to proteolytic degradation. On the other hand keratin containing waste is a promising material for production of value added products by use of traditional and emerging technologies. The traditional method of treatment of such waste is the hydrolysis of tough structure and used as animal feed. Biological agents have potential to degrade such recalcitrant substrate in an ecofriendly manner. Various isolation studies evident the existence of keratin waste degrading microorganism actively involved in keratin degradation which is accomplished by the specific protease called keratinases. The present century can look forward to these enzymes for addressing challenging issues of solid waste management, fuel scarcity, leather processing and prion contamination in meat products by attacking keratin residues. In the last few decades varieties of organisms have been explored for the production of keratinases and keratin degradation, but still there is need to exacerbate the treatment process. However, to ameliorate and meet this optimism, the complex mechanism of keratinolysis needs to be well understood. In addition, more novel, robust keratinases need to be explored through modern techniques.*

Keywords*: Keratin waste, microbial keratinases, degradation, hydrolysis*