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Project Report

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**EXTRACTION, CHARACTERIZATION AND
ELECTROSPINNING OF KERATIN FROM CHICKEN
FEATHERS AND HUMAN HAIR FOR THEIR ECO-FRIENDLY
REUSE - AN APPROACH TO BIO-WASTE TREATMENT AND
ITS MANAGEMENT**

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ABSTRACT

Poultry slaughter-houses produce large amount of feathers every day. Wastes from unserviceable feathers from poultry are not valorised and are simply disposed off which is environmentally unacceptable. Hence, the focus here is on Keratin, one of the most abundant and unexploited non-food proteins, being the major component of hair, feathers, nails and horns of mammals and birds. In spite of their important and interesting characteristics Keratin wastes represent a rather complicated disposal challenge because burning these in special installations are economically inefficient and polluting due to the high sulphur content (3-4% wt). Pooling and processing into biopolymers might be a better way of exploiting such a large quantity of protein biomass. Keratin-based materials can be used in biotechnological and biomedical fields for tissue engineering and the production of affinity membranes, due to their biocompatibility. Hence the present research is being conducted to extract keratin protein from chicken feathers. Chicken feathers have high level of keratin protein content and are one of the most suitable protein source.

Our work involves extraction of Keratin from chicken feather using different reducing agents. After all the processing methods, the extracted protein is characterized for Keratin by means of Biuret test and XRD. The extracted keratin has been used to generate biofilms which has wide range of applications such as wound healing, drug delivery etc., The biofilm has been modified by adding ferric oxide which exudes antifungal property.