VETERINARY SCIENCE RESEARCH JOURNAL
olume 3 | Issue 1 & 2 | April & October, 2012 | 1-3

RESEARCH ARTICLE

Screening of fungi isolated from poultry farm soil for keratinolytic activity

K.D. MINI, MINI K. PAUL[1] AND JYOTHIS MATHEW[1]

Member of the Research Forum

Associate Author :
[1]Sree Sankara College, Kalady, ERNAKULAM (KERALA) INDIA

Author for correspondence :
K.D. MINI
Sree Sankara College, Kalady, ERNAKULAM (KERALA) INDIA

Email: minianup@yahoo.co.in

Abstract : Poultry farm soil samples collected from different localities of Ernakulum and Thrissur districts of Kerala were screened for the keratinolytic fungi. During the course of study 8 different fungi were isolated and identified. *Aspergillus, Chrysosporium, Microsporum, Trychophyton* and *Penicillium* were the fungi isolated and were grown in wheat bran substrate. Feather keratin powder was added to the substrate to enhance the enzyme production. They were found utilizing keratin substrate releasing keratinase enzyme into the medium. These enzymes were assayed for their activity. Some cultural conditions were tested to attain maximum keratinase production. Maximum enzyme production was reached on the 4th day of incubation of the culture at 37°C and pH 8.5.

Key words : Kerainolytic fungus, Keratin, Keratinase, Bioremediation, Soil fungi, Enzyme assay, Keratinophilic fungus

How to cite this paper : Mini, K.D., Paul, Mini K. and Mathew, Jyothis (2012). Screening of fungi isolated from poultry farm soil for keratinolytic activity, *Vet. Sci. Res. J.*, **3**(1 & 2) : 1 - 3.

Paper history : Received : 06.06.2012; Revised : 25.07.2012; Accepted : 20.08.2012

INTRODUCTION

The selected fungi can degrade the hair, nail, hoof, wool etc. present in the soil. This capacity of the fungus can be exploited for bioremediation.

Fungi are an important component of the soil microbiota more in abundance than bacteria, their population depends upon soil depth and nutrient conditions. The soil samples were collected from different sites of Ernakulam and Trichur districts. The soil collection mainly focussed the proximities of poultry farms, dumping sites of animal hair, hoof, nail etc. Different soils have specific fungus flora, but the majority of species found in them are cosmopolitan (Ainsworth and Sussman, 1968). Fungi present in the soil include keratinophilic (keratin loving) and some keratinolytic (keratin digesting) strains. Many of them are potential pathogen to both human and animals. Soils that are rich in keratinous materials are most conducive for the growth and occurrence of keratinophilic fungi (Moallaei and Zaini, 2006). Keratin is a major component of feathers. Among the microbes that cycle keratin protein in nature, keratinophilic fungi are very common and the most diverse. If keratinolytic fungi were not there to cycle this highly stable protein (keratin), we can imagine the quantity of keratin that would have accumulated on earth, since a vast quantity of keratin is shed by the vertebrates. Indian soils contain many more keratinophilic fungi than those presently recorded, and there is need for further taxonomic and ecological studies of this interesting group of organisms (Sharma and Rajak, 2003). The potential use of keratinases have different applications where keratins should be hydrolysed, such as the leather and detergent industries, textiles, waste bioconversion, medicine, and cosmetics for drug delivery through nails and degradation of keratinized skin. Fungi also display lipolytic activity and remove petroleum hydrocarbons from the medium during degradation of proteins.

A distinctive feature of keratin is its relatively high sulphur content due to the presence of sulphur containing amino acids *viz.,* cystiene, cysteine and methionine. Thus, the disulfide bonds are considered to be responsible for the stability of keratin and its resistance to enzymatic degradation (Kunert, 1973). Keratinolytic mycoflora love to grow and even reproduce on keratin materials such as skin, hair, nail, fur,