Pak. J. Bot., 6 (2): 165, 1974.

MYCOFLORA OF POULTRY FEEDS

ARSHAD JAMAL AND ABDUL GHAFFAR

Department of Botany, University of Karachi, Karachi, Pakistan.

The poultry industry has played a significant role in meeting the demands of meat shortage in the country. There is an average annual consumption of approximately 80,000 bags equivalent to 4000 metric tons of the poultry feeds sold by atleast 6 manufacturers in Karachi alone. The main constituents of poultry feeds are grains of wheat, rice, millet, maize, rye and fish meal. There does not appear to be any quality control in Pakistan in the manufacture of poultry feeds nor information is available with regards to its deterioration during storage or transit. Micro-organisms are principally responsible for spoilage of foods and feeds (Gray, 1959). A preliminary experiment was therefore carried out to study the population of mycoflora in poultry feeds.

Thirteen samples of poultry feeds (pH 5.1-5.6; mositure content 7.6-9.6%) were collected at random from 6 different manufacturers of Karachi area. Using Czapek Dox Agar, pH 5.3, dilution plates were prepared and fungi growing after 6 days incubation at 25°C were isolated and identified (Raper & Fennel, Raper & Thom, 1949; Booth, 1971; Barnett, 1955). A population of 4000-38,000 fungal propagules per g of poultry feed, was obtained in fresh samples as compared to 24-126,000 fungal propagules per g of feeds in old samples (the exact date of manufacturing could not be ascertained). *Aspergillus fumigatus*, *A. niger*, *A. terreus*, *A. candidus*, *A. flavus*, *A. caespitsous*, *Cladosporium herbarum*, *Fusarium oxysporum*, *F. solani*, *Monilia sitophila*, *Paecilomyces vario* , *Penicillium* spp. and *Mucor* sp. were found to be prevalent with a preponderance of the Aspergilli and Penicillia.

Of the fungi isolated *A. fumigatus* produces a disease called Aspergillosis in birds often referred to as "brooders pneumonia" among chicken breeders. It is contracted by birds through eating moldy grains or through contact with moldy straw (Fox, 1923). Whereas some isolates of *A. flavus* produce no mycotoxin, others are known to produce quite large amounts of aflatoxin. In 1961 in England, young turkeys fed on toxic peanut meal imported for Brazil died as a result of aflatoxin production. The LD50 value for aflatoxin is 0.5 mg/kg body weight of a day old duckling which produces symptoms of internal haemorrhage, convulsion, staggering and hepatic necrosis (Hesseltine, 1969). Secretions from miro-organisms present in feeds alter the pH of the intestine and with the increase in pH food utilization, enzyme activity and absorption of some metabolic ions are affected (Ford, 1974).

The use of poultry feeds with a preponderant population of molds, factors affecting mold growth and the elaboration of toxins by these molds in poultry feeds needs careful investigation.

References

Barnett, H. L. 1955. Illustrated genera of Imperfect Fungi. Burges publication Co. Minnepolis.

Booth, C. 1971. The genus Fusarium. Commonwealth Mycological Institute, Kew, Surrey, England.

Ford, F.J. 1974. The effect of the microflora on gastro intestinal pH in the chickens. Bri. Poult. Sci. 15 : 131-140.

Gray, W.D., 1959. The relations of fungi to human affairs. Henry Holt& Co., Inc., N. York.

Raper, K.B. and Thom, C, 1949. A manual of the Penicillia. Williams & Wilkins Co., Balti-More.

K.B. Raper and D.I. Funnel, 1949. The genus Aspegillus. Williams & Wilkins Co. Baltimore.

Fox, H 1932. Disease in captive wild mammals and birds. Lippincott, Philadelphia.

Hesseltine, C.W. 1969. Mycotoxins. Mycopath. et Mycol. Applicata, 39: 371-383.