

## Aflatoxin Contamination of Livestock Feeds and Feed Ingredients in Andhra Pradesh

Mohanamba, T., M.Vasundhara Priyanka, L.Ratna Kumari and R.Amarendra Kumar

Veterinary Biological and Research Institute, Labbipeta, Vijayawada

(Received: July 2024 155/24 Accepted: September 2024)

### Abstract

An attempt was made to study the aflatoxin contamination of compound livestock feeds and feed ingredients in Andhra Pradesh during the year 2023-24. Aflatoxin estimation was made by AOAC methods. Among the compound livestock feeds tested, highest incidence was noticed in cattle feeds followed poultry feeds. Analysis of feed ingredients revealed highest incidence in groundnut cake followed by maize.

**Keywords:** Livestock feeds, GN Cake and Maize, Aflatoxin.

Aflatoxins are toxic metabolites elaborated by the moulds *Aspergillus flavus* and *Aspergillus parasiticus*. Aflatoxins are known to be potent hepatotoxic, hepatocarcinogenic, mutagenic and teratogenic agents in a variety of animals and poultry. The susceptibility of animals to aflatoxins depends on species (duckling, rabbit, turkey, chicken, swine, cattle and sheep in the decreasing order), and the animal's nutritional status. The fungus can grow on a variety of feed stuffs and the toxins are stable in processing and cooking conditions. The present paper deals with studies on aflatoxin contamination of compound livestock feeds and feed ingredients in Andhra Pradesh.

### Materials and Methods

A total of 240 animal feed samples comprising of 142 compound livestock feed samples and 98 feed ingredients received from different places of Andhra Pradesh at Toxicology and Feed analytical laboratory, VBRI, Vijayawada during the year 2023-24 were screened for aflatoxin contamination. Aflatoxin B1 was extracted and estimated as per AOAC methods (AOAC 2021). The Aflatoxin was extracted

with aqueous acetone, spotted on activated thin layer chromatography (TLC) plate along with referral standards and quantification was done by viewing under UV cabinet.

### Results and Discussion

The levels on Aflatoxin B1 in compound livestock feed samples and feed ingredients are detailed in the Table I.

Among the 142 compound livestock feed samples tested, 14 samples were found positive with a percent positivity of 9.5%. Highest positivity was noticed in cattle feed samples ( 8 samples) followed by poultry feed (6 samples). The aflatoxin content in the cattle feed samples ranged from 50 to 540ppb. Out of twelve poultry feed samples tested, 6 were found positive. The aflatoxin level ranged from 40 to 540ppb.

Among the feed ingredients tested, highest incidence of aflatoxin was recorded in groundnut cake followed by maize and ricebran.

Gopal *et al* (1968) recorded a natural outbreak of aflatoxicosis in dairy cattle due to feeding of aflatoxin contaminated groundnut meal. Sastry *et al* (1965) reported deaths among Murrah buffaloes due to feeding of concentrate mixture containing 20% groundnut cake contaminated with aflatoxin. Incidence of aflatoxins in dairy cattle feed is a serious problem because the aflatoxin B1 is excreted through milk as aflatoxin M1. Allcroft *et al* (1968) reported a linear relationship between the amount of aflatoxin ingested and the concentration of aflatoxin M1 in milk.

Among forty five samples of groundnut cake tested, ten samples were found positive. The aflatoxin content in the samples ranged from 200 to 4000ppb. The range of aflatoxin in affected maize and ricebran samples varied from 40 to 200ppb and 100 to 500 ppb respectively.

\*Corresponding author : Email : tfalvbrivja@gmail.com

**Table I.** Table showing the number of feed samples tested, number of positive samples, percentage of incidence and aflatoxin range

Sl. No	Type of Sample	No of samples tested	No of positives	% Incidence	Range (ppb)
1	<b>Compound livestock feed</b>				
	Cattle feed	40	8	20.00	50-540
	Calf feed	5	0	-	-
	Poultry feed	16	6	41.60	40-540
	Pig feed	81	0	-	-
2	<b>Feed ingredients</b>				
	Groundnut cake	45	10	22.20	200-4000
	Maize	12	2	16.60	40-200
	Rice bran	14	2	14.30	100-500
	Black gram	5	0	-	-
	Green gram	3	2	66.60	50-60
	Horse gram	4	0	-	-
	Finger millet	4	0	-	-
	De-Oiled groundnut cake	2	0	-	-
	Cotton seed cake	4	1	25.00	-
	Palm oil seed cake	4	1	25.00	-
	Paddy straw	1	0	-	-
	<b>Total</b>	240	32	13.30	

Char *et al* (1982) reported heavy mortality among poultry due to feeding of groundnut cake containing 3590 ppb aflatoxin.

Choudary *et al* (1982) reported cyanotic combs, loss of appetite, listlessness, drop in egg production from 80 to 20% and 100% mortality in poultry farms in and around Chittoor. Their rations contained 1400 to 3600 ppb of aflatoxin in maize and groundnut cake.

### Summary

Screening of 142 compound livestock feed samples and 98 feed ingredients for aflatoxin revealed highest incidence in cattle feed followed by poultry feed. Among the feed ingredients tested highest incidence of aflatoxin was noticed in groundnut cake followed by maize and ricebran. Aflatoxins are known to cause mortalities among poultry, cattle and buffalos besides causing severe drop in egg production in poultry.

### Acknowledgement

The authors are highly thankful to the Director of Animal Husbandry, Andhra Pradesh, and the Joint Director, VBRI, Vijayawada for providing the facilities to carry out the work.

### References

- Allcroft, R., and Roberts, B.A. (1968) Toxic groundnut meal: the relationship between aflatoxin B<sub>1</sub> intake by cows and excretion of aflatoxin M<sub>1</sub> in Milk. *Veterinary Record* **82**(4): 116-118.
- AOAC (2021) Official Method 21<sup>st</sup> edn, Official Methods of Analysis 973.50
- Char, N.L., Rao, P., Khan, I., and Sharma, D.R. (1982). An outbreak of aflatoxicosis in poultry. *Poultry Adviser, Bangalore, India* **15**(3): 57-58.
- Choudary, C., and Rao, M.R.K.M. (1982). An outbreak of aflatoxicosis in commercial poultry farms. *Poultry Adviser, Bangalore, India* **16**(6): 75-76.
- Gopal, T., Zaki, S., NArayanaswamy, M., and Premlata, S. (1968). Aflatoxicosis in dairy cattle. *Indian Veterinary Journal* **45**(9): 707-712.
- Sastry, G.A., NArayana, J.V., Rama Rao, P., Christopher, K.J., and Hill, K.R. (1965). A report of the groundnut toxicity in Murrah buffalos in Andhra Pradesh (India). *Indian Veterinary Journal* **42**: 79-82.