

Clinical Epidemiological Investigation of Moldy Grain and Fodder Poisoning in Goat in Kathmandu Valley

Kedar Karki

Senior Veterinary Officer Veterinary Officer, Central Veterinary Laboratory Tripureswor, Kathmandu (Nepal).

(Received: 25 October 2011; accepted: 02 December 2011)

An outbreak of a syndrome of unknown etiology associated with the feeding of moldy maize grain and green fodder to goat in a herd of male 3853 goats for sale for the Dashahara festival during the month of October-2010 in Kathmandu valley. In a period of 10 days 500 goats suddenly became ill with symptoms of anorexia, apathy, diarrhea and ruminal stasis. On clinical examination these goats were provisionally diagnosed with sudden illness and moldy corn/fodder poisoning was suspected. They were treated with Biolive, tetrachlor, polyte, C-lyte, Stress care, Antidegnala liquor, but 250 goats died. Necrosis of the fore stomach mucosa was the most characteristic gross pathological change. Clinical pathological findings included mild focal erosions to severe, diffuse, coagulative necrosis of the mucosa in the rumen, reticulum and omasum and congestion and hemorrhages in the abomasum. Liver with shrunken appearance and pale to yellowish discoloration with bile filled distended bladder, pin point hemorrhage in kidney, intestine with excessive mucus. On mycological and microbiological examination of tissue samples from post-mortem of dead goat on respective medium revealed the growth of fungal pathogens like *Penicillium* spp with *Staphylococcus*. These results provide circumstantial evidence that feeding on moldy maize grain and green fodder leaves infested with *Penicillium* may cause outbreaks of systemic Mycosis in goats.

Key words: Moldy maize, Green fodder, *Penicillium*, Spp, Fungus, Male Goat, Kathmandu valley, Dashahara.

During the Dashahara festival of the year 2010 about 3853 male goats intended to be supplied by Nepal Food Corporation to the customers in Kathmandu valley were being purchased from Eastern region, Central region, Mid-western region of Nepal. In lairage these goats were being fed occasionally with whole maize grains and exclusively green fodder leaves. On clinical examination based on history these goats were

provisionally diagnosed with sudden illness suspected to be due to moldy corn/fodder poisoning. They were treated with Toxalivom Biolive, tetrachlor, polyte, C-lyte and Stresscare, Antidegnala liquor (Zinc salt solution) in drinking water.

MATERIAL AND METHODS

Clinical examination of goats in lairage

From 2067-6-20 about 500 goats present in lairage for sale in Nepal Food Corporation's compound, were clinically examined, were for symptoms similar to those reported by Dr. White (2008), Schneider, et al (1985), Medd, et al, (2008) and Whitlow et al (2008) about poisoning from pathogens in grain and fodder.

* To whom all correspondence should be addressed.

Post-Mortem Examination of dead goats

Post-Mortem examination of all the dead goats was done in the premises of the food corporation compound for pathological effects similar to those experimentally induced by Schneider (1985), and reported by Dhama *et al.*, (2007), Medd, *et al.*, (2008) and Hussein, *et al.*, (2001).

Microbial/Mycobioal Culture examination of Post-Mortem Tissue samples

Mycological and microbiological examination was done on tissue samples from the dead goats cultures made on respective media for the growth of fungal pathogens like *Penicillium* spp with *Staphylococci* similar to the findings of Karki, *et al.*, (2008); Wendell (2008); Roberts *et al.*, (2005); Sabreen, *et al.*, (2001). All nasal and rectal swabs from sick and dead animals were tested for PPR with penside test.

Treatment and preventive measures applied

All the goats present in lairage were treated with Toxalivom, Biolive, tetrachlor, polyte, C-lyte, Stresscare, Antidegnala liquor (Zinc salt solution) as described by Pinto, *et al.*, (2005) in Controlling Pithomycotoxicosis (facial eczema) in ruminants, in the Azores, Portugal in drinking water.

RESULTS AND DISCUSSION

As during warm humid climate of tropics and subtropics favors growth of mold and fungus in feed grains and fodder especially after heavy monsoon rain feeding livestock and poultry exclusively on such grain seems to cause the detrimental effect in the health to these animals. In this investigation there were clinical signs of anorexia, apathy, diarrhea and ruminal stasis and clinical pathological findings included mild focal erosions to severe, diffuse, coagulative necrosis of the mucosa in the rumen, reticulum and omasum and congestion and hemorrhages in the abomasum. The liver had shrunken appearance and pale to yellowish discoloration with a bile-filled distended bladder, pin point hemorrhage in kidney, and small intestine with excessive mucus.

On mycological and microbiological examination of tissue samples from post-mortem of dead goat on respective medium revealed the growth of fungal pathogens like *Aspergillus* and *Penicillium* spp with *Staphylococcus* spp. All nasal

and rectal swabs from sick and dead animals that were subjected to the PPR with penside test turned out to be negative.

These results provide circumstantial evidence that feeding of moldy maize grain and green fodder leaves infested by *Penicillium* and *Aspergillus* spp may have caused this outbreak of a systemic Mycosis in these goats and therefore there need for thorough investigation in field areas from where these goats were bought.

ACKNOWLEDGMENTS

I would like to thank Mr. Bal Bahadur Kunwar, Mr. Tek Bahadur Air Senior Vet. Technician, Mr. Bhimsen Adhikari Vet. Technician of Microbiology Unit, Mr. Purna Maharajan Vet Technician of Central Veterinary Laboratory for doing the microbiology and post-mortem works, and office assistant Mr. Chandra Bahadur Rana, for his tireless efforts in handling the carcasses during post-mortem work.

REFERENCES

1. C. Pinto, V. M. Santos, J. Dinis, M. C. Peleteiro, J. M. Fitzgerald, A. D. Hawkes, B. L. Smith: Pithomycotoxicosis (facial eczema) in ruminants in the Azores, Portugal: veterinaryrecord.bmj.com/content/157/... doi: 10.1136/vr.157.25.805 *Veterinary Record*, **157**: 805-810 (2005).
2. Schneider DJ, Marasas WF, Collett MG, van der Westhuizen GC. An experimental mycotoxicosis in sheep and goats caused by *Drechslera campanulata*, a fungal pathogen of green oats. *Onderstepoort J Vet Res.* **52**(2): 93-100 (1985). www.ncbi.nlm.nih.gov/pubmed/4047622 -Retrieved on 29 October 2010
3. R. W. Medd, G. M. Murray and D. I. Pickering: Review of the epidemiology and economic importance of *Pyrenophora semeniperda*. *Australasian Plant Pathology* **32**(4) 539 – 550. www.publish.csiro.au/?act=view_file&file_id=AP03059.pdf -Retrieved on 29 October 2010
4. Dhama K, Chauhan R S I,*, Mahendran Mahesh, Singh KP1, Telang AG1, Singhal Lokesh I, Tomar Simmi2 Aflatoxins-hazard to livestock and poultry production: A review *Journal of Immunology & Immunopathology* Year : 2007, Volume : 9, Issue : 1 and 2. Division of Pathology, Indian Veterinary Research Institute, Izatnagar-243122 (UP), INDIA. ICADRAD, Indian

- Veterinary Research Institute, Izatnagar-243122 (UP), INDIA. 2Division of Animal Sciences, Central Agricultural Research Institute(CARI), Port Blair, A&N Islands, INDIA. indianjournals.com/ijor.aspx? target= ijor:jii &volume=9& issue= 1and2& article=001 &type=pdf :-Retrived on 29 october 2010
5. Outbreaks called “moldy corn toxicosis,” “poultry hemorrhagic syndrome, ... Adult cattle, sheep, and goats are relatively resistant to the acute form of the ...www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/212202.htm :- Retrived on 29 (2010)
 6. C. Wendell Horne, Mycotoxins in Feed and Food-producing Crops Associate Department Head and Extension Program Leader for Plant Pathology and Microbiology and Committi Chairmanpublications. tamu.edu/publications/ Corn/B-1279 Mycotoxins.pdf:-Retrived on 29 october 2010
 7. L. W. Whitlow and W. M. Hagler, Jr. Mold and Mycotoxin Issues in Dairy Cattle: Effects, Prevention and treatment www.ces.ncsu.edu/disaster/drought/Mycotoxin-Review.pdf:- Retrived on 29 october 2010
 8. L. W. Whitlow, Department of Animal Science and W. M. Hagler, Jr., Mycotoxin Contamination of Feedstuffs - An Additional Stress Factor for Dairy Cattle Department of Poultry Science North Carolina State University, Raleigh NC. www.cals.ncsu.edu/an_sci/extension/dairy/mycoto~1.pdf :-Retrived on 29 october 2010
 9. Dr. Maurice E. White: Aflatoxin Toxicity, Aflatoxicosis in Sheep and Goats : A Diagnostic Support System for Veterinary Medicine Cause Page: 2008 Cornell University College of Veterinary Medicine. :-Retrived on 29 october 2010 Aspergillus/aspergillosiswebsite; www.aspergillus.org.uk/secure/veterinary/chap1mammalian.htm - 24k :-Retrived on 29 october 2010
 10. Roberts T. A., . Cordier J.-L, Gram L., Tompkin R. B., Pitt J. I. , Gorris L. G. M. and Swanson K. M. J. (2005) Meat and meat products: Other animals carrying *E. coli* O157 include sheep, goats, wild deer, pigs, by *Penicillium*, *Rhizopus*, and *Aspergillus* spp. (ICMSF, 1980b). *Micro-Organisms in Foods* 6 :1-106, www.springerlink.com/index/q7g038v8x3m10026.pdf:-Retrived on 29 october 2010
 11. Sabreen, M. S. and Zaky, Z. M.* Incidence of Aflatoxigenic Moulds and Aflatoxins in Cheeses. Food Hygiene Dept., and *Forensic Med. & Toxicology Dept., Fac. of Vet.Med., Assiut Univ. BULLETIN : Its Cong of Food Hygiene & Human Health, 6-8 February 2001 Dept. of FoodHygiene, Fac. Vet. Med., Assiut. www.aun.edu.eg/env_enc/ee2002/1-50_n_.PDF:-Retrived on 29 october 2010
 12. Hussein S. Hussein, and Jeffrey M. Brasel; Toxicity, metabolism, and impact of mycotoxins on humans and animals School of Veterinary Medicine, University of Nevada-Reno, Mail Stop 202, Reno, NV 89557, USA Received 16 April 2001; accepted 10 July 2001. Available online 19 September 2001. linkinghub.elsevier.com/retrieve/pii/S0300483X01004711. :-Retrived on 29 october 2010
 13. Kedar Karki and Purnima Manandhar: Clinical-Epidemiological Investigation of Mouldy Corn Poisoning due to *Penicillium* spp. in mules at Udayapur District, Nepal: *Veterinary World*. 1(4): 107-110 (2008).