

Determination of the Prevalence of Bovine Cryptosporidiosis and aflatoxin M1 among urban small holder dairy households in Dagoretti Division, Nairobi Kenya. 2014

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Abstract:

Cryptosporidium is a coccidian parasite belonging to the phylum apicomplexa. It causes human and animal cryptosporidiosis a disease characterized by severe gastroenteritis and watery diarrhea. The disease occurs after ingestion of Cryptosporidium oocysts, shed in human or animal feces. The prevalence of bovine cryptosporidiosis was investigated alongside that of aflatoxin M1 in milk. Aflatoxin M1 is a major metabolite of Aflatoxin Bland is found in milk of animals that have consumed feed contaminated with aflatoxins. Aflatoxins are potent toxic carcinogenic, mutagenic and immunosuppressive agents harmful to the health of the people. The prevalence and knowledge of bovine cryptosporidiosis and detection of Aflatoxin M1 (AFM1) were studied between smallholder dairy and non-dairy farming households in Dagoretti Division Nairobi Kenya, between January and June 2005. The purpose of the study was to establish the prevalence of the two hazards in order to enable the small holder dairy producers, traders, consumers and policy makers to adopt mitigation strategies to the problem. Three hundred (300) and 150 dairy and non-dairy households respectively, were randomly selected for the cross sectional study and mapped using GPS for future follow-up. Focus group discussions and household questionnaire administration were used to collect qualitative data. Cryptosporidium oocysts were identified using Ziehl Nelsen method, while Aflatoxin M1 in milk was determined using aflatoxin kit purchased from Charm Sciences which is a rapid receptor lateral flow assay that detects Aflatoxin M1 at 500ppt USA action level. In the study, three hundred and ninety six (396) milk samples comprising 260 and 136 from dairy and non dairy households respectively were analyzed for AFM1. For identification of Cryptosporidium oocysts, 278 adult cattle and 150 calves' pooled fecal samples were microscopically examined using Ziehl Nelsen method. Of the calf fecal samples, 11.3% (17/150) were positive for Cryptosporidium oocysts, while 12 % (33/278) of the adult fecal samples were also positive for the same. There were 50 positive samples from 286 households where at least one fecal specimen was taken giving an apparent prevalence rate of 17%. A household was considered positive for bovine cryptosporidiosis if Cryptosporidium oocysts were found in at least one pooled sample (adult, calf or both) from that household. Positive status for households were associated with numbers of animals, feeding the cattle with water from the household well, and cementing the cattle shed floor ($p < 0.05$). More dairy respondents, 20% (55/280) were aware of the disease cryptosporidiosis than their non-dairy neighbors, 4% (5/132). However, knowledge on transmission and symptoms of the disease was low for both groups. The prevalence of Aflatoxin M1 in the tested households was 45% (178/396). The prevalence of Aflatoxin M1 in the farming households was 43% as compared to 49% in the non-farming households. Nevertheless, this difference was not statistically significant [P= 0.35]. Although

there was a 17% prevalence rate of cryptosporidiosis, it does not constitute a human health risk unless *Cryptosporidium parvum* is present. The AFMI prevalence of 45% exceeds the WHO/FAO tolerance limit for milk. It points to an underlying problem that requires the action by policy makers. Awareness on the two hazards was low, and needs to be created. Further" research is needed to identify the *Cryptosporidium* genotypes, and quantify AFMI in milk in order to provide further information for guided health education and policy formulation.