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Determination and Quantification of Aflatoxin M_1 in Fresh Milk Samples Obtained in Goats and Cattle in Selected Rural Areas of the Limpopo Province, South Africa

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ABSTRACT In this study, the Enzyme Linked Immuno-sorbent Assay (ELISA) was used to detect aflatoxin M1 (AFM_1) detection in 118 milk samples from subsistence farms in selected rural areas in the Limpopo Province, South Africa. This was designed to evaluate the possible health risks on individuals who are exposed to this mycotoxin either through contact or consumption of milk that is contaminated. A further objective was to quantify the levels of AFM_1 using the RIDASCREEN® kit and to assess the effect of climatic conditions on AFM_1 contamination in milk from two areas—Nwanedi, which is relatively dry and hot compared to Mapate, which is a mountainous, hot and humid area. Results from this study showed that all the samples (100%) from cattle and goats in both Nwanedi and Mapate were contaminated with AFM_1. In addition, it was noted that 90.6 percent and 62.1 percent of the milk samples from cattle and seventy-six percent and 53.8 percent of those obtained from goat's milk in Mapate and Nwanedi respectively, had AFM_1 concentrations $\geq$ 0.05 µg/l. These results show that animal nutrition did seriously influence the quality of milk in regard to AFM_1 contamination. It was noted that animals that were poorly fed had highly contaminated milk as compared to other animals. In addition, climatic conditions did influence the quality of milk collected in both areas. Chronic exposure of the population and particularly children to this contaminated milk, would have negative impacts on their health.