Incidence of Aflatoxin M1 in Human Milk and Animal Milk from Jordan

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This study was undertaken to determine the presence of aflatoxin M1 (AFM1) in animal milk and the exposure of infants to aflatoxin M1 (AFM1) and lactating mothers to aflatoxin B1 (AFB1), using AFM1 in breast milk as a biomarker for exposure to AFB1. A total of 100 samples of fresh animal milk (cows, goats, camels and sheep) and fermented milk (buttermilk) and 100 samples of human breast milk were collected during 2010-2011 years. An enzyme-linked immunosorbant assay (ELISA) was used for the analysis of milk samples. AFM1 was detected in all animal milk samples with average concentration of 56.17 ng/kg (range 7.05-129.79 ng/kg) in fresh milk samples and 1079.57 ng/kg (range 47.97-2027.11 ng/kg) in fermented milk. The concentration of AFM1 in 70 samples from fresh and fermented milk were higher than the maximum tolerance limit accepted by European Union and USA (50 ng/kg).

For human milk samples, the average concentration of AFM1 was 67.76 ng/kg (range 9.71-137.18 ng/kg), the concentration of AFM1 in 95 samples were higher than the maximum tolerance limit accepted by European Union and USA (25ng/kg). Logistic regression analysis failed to show a relation between AFM1 and type and amount of dairy consumption, vegetables, fruits and meat. But it was a relation to the cereal consumption. The present study is the first one ever carried on the occurrences of AFM1 in milk consumed by the Jordanian population.

Keywords: Aflatoxin M1, animal Milk, human milk, ELISA, Jordan.