Abstract

Pasteurized milk may contain the liver carcinogen aflatoxin M_1 (AFM_1) if cow ingests aflatoxin B_1 contaminated feed. We collected twelve milk samples per month of three predominant brands in Taiwan; infant formulae produced domestically or imported were also purchased in two periods. A total of 160 samples were extracted by solid-phase extraction, cleaned up by immunoaffinity columns, and quantified by LC/MS/MS. Levels of AFM_1 in the autumn and the winter were higher than those in the spring and the summer; interestingly, concentrations of AFM_1 in low-fat milk were higher than those in whole-fat milk samples. All milk samples were detectable at trace levels (1.17–54.7 ng/L) of AFM_1 (LOD = 1.4 ng/L) but there was only one sample slightly exceeded the European Union maximum level (0.05 μg/L). In contrary, AFM_1 in infant formulae were all non-detectable (LOD = 12 ng/kg). The risk of liver cancer was evaluated using the WHO method. The most risky group is the 6–9 years old female (12.2 additional cases in average); the male group at 45–64 years old has the lowest risk (3.45 additional cases averagely), and this would result from their lower milk consumption than other groups. Consequently, the liver cancer risk is low for Taiwan people via milk ingestion of AFM_1.

Keywords: aflatoxin M_1, risk assessment, infant formula, milk