Thesis Title	Biotransformation of Aflatoxin B_1 in Dairy Cow Feeds to Aflatoxin M_1 in Milk
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ABSTRACT

Aflatoxin B_1 is one of the four major aflatoxins (B_1, B_2, G_1, and G_2) produced by certain strains of *Aspergillus flavus Link ex Fries* and *A. parasiticus Speare*, which can grow on agricultural products and grains. Aflatoxin M_1 is the major metabolite of aflatoxin B_1 which is excreted in milk. Toxicological studies revealed that aflatoxin M_1 is a potent hepatotoxin producing liver lesions indistinguishable from those observed in one-day-old ducklings receiving a similar dose of aflatoxin B_1. Recently, it has been shown that aflatoxin M_1 caused hepatocellular carcinoma in rats. Due to potent toxic effects of aflatoxin M_1, many countries have regulated maximal concentrations of aflatoxin B_1 in dairy cow feeds and aflatoxin M_1 in milk. In Thailand, however, there are no specific regulations for concentrations of aflatoxin B_1 in dairy cow feeds and aflatoxin M_1 in milk. In order to get compatibility between the limits of aflatoxin B_1 in dairy feeds and aflatoxin M_1 in milk, the carry-over rate of aflatoxin B_1 to aflatoxin M_1 must

be known. Earlier studies have reported the values of carry-over rate between 0.2 and 3.9%.

This study was designed to determine the carry-over rate of aflatoxin B_1 to aflatoxin M_1 throughout the 36-week lactation period in ten Holstein cows consuming dairy cow feeds naturally contaminated with aflatoxin B_1. The average carry-over rate during the early lactation (2 - 6 weeks) of the ten cows was 2.01%, which was comparable to the values from earlier studies. Two types of concentrated feeds (concentrate mix and commercial pellets) used in this study were shown to have no effects on the carry-over rate. High milk-yielding cows secreted aflatoxin M_1 in milk with a significantly greater carry-over rate than the low milk-yielding cows. The carry-over rate obtained from this report and from other studies may be used to establish a standard limit of aflatoxin B_1 concentration in dairy cow feeds which should give a safe level of aflatoxin M_1 in milk to consumers.