Proposal No. _____

The Anderson Research Grant Program
2003 – 2005

Project Title:

Biological Evaluation of Reduction of Fumonisin B_1 Toxicity in Corn Grits by Extrusion Processing

Principal Investigator(s)

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PROBLEM IDENTIFICATION AND RELATED RESEARCH

Fumonisin B_1 (FB_1; Figure 1), has been found to be the most commonly occurring mycotoxin in corn (maize) (Miller, 1994). The main organisms involved in the production of FB_1 in North America are *Fusarium verticillioides* (formally known as *F. moniliforme*) and *F. proliferatum*. Surveys have shown that FB_1 occurs not only in corn grain, but also in finished corn-based processed food products. Previous studies have also shown that while FB_1 is fairly heat stable, extrusion processing may significantly reduce concentrations of this mycotoxin. *Based on our previous studies we believe that extrusion processing offers hope as a processing technology that can be used to reduce concentrations of FB_1 in corn-based foods.*

However, these results are based on analyses showing reduction of FB_1 by extrusion processing, that were done by chemical (high-performance liquid chromatography, HPLC) and immunological (enzyme-linked immunosorbent assay, ELISA) assays that are based on the chemical structures of the toxin. Therefore it has not yet been proven conclusively that the toxicity or biological action of FB_1 is destroyed by extrusion processing and not converted to another form that may remain toxic. This information would be crucial for the food industry to implement the strategy as a means of reducing FB_1 concentration by extrusion to assure increased safety of corn-based foods. Consequently, it is important to determine if residual toxicity of FB_1 remains after extrusion processing using suitable bioassay techniques to assess the true efficacy of extrusion processing.

In this research we propose to extend our previous studies and answer this last but