

Proposal No. _____

**The Anderson Research Grant Program
2003 – 2005**

Project Title:

Biological Evaluation of Reduction of Fumonisin B₁ Toxicity in Corn Grits
by Extrusion Processing

Principal Investigator(s)

Name	<i>Institution/Agency/Other</i>
Lloyd B. Bullerman	<i>University of Nebraska-Lincoln</i>
Dojin Ryu	<i>University of Nebraska-Lincoln</i>

Project contact:

Name:	<i>Lloyd B. Bullerman</i>
Address:	<i>349 FIC, East Campus Department of Food Science and Technology University of Nebraska-Lincoln Lincoln, NE 68583-0919</i>
Phone:	<i>402-472-2801</i>
Fax:	<i>402-472-1693</i>
E-mail:	<i>lbullerman1@unl.edu</i>

Period of Proposed Project Dates:

Beginning: September 1, 2003

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Amount Requested:

Year1: \$20,000

Year2: \$20,000

PROBLEM IDENTIFICATION AND RELATED RESEARCH

Fumonisin B₁ (FB₁; 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 FB₁ in North America are *Fusarium verticillioides* (formally known as *F. moniliforme*) and *F. proliferatum*. Surveys have shown that FB₁ occurs not only in corn grain, but also in finished corn-based processed food products. Previous studies have also shown that while FB₁ 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 FB₁ in corn-based foods.*

However, these results are based on analyses showing reduction of FB₁ 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 FB₁ 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 FB₁ concentration by extrusion to assure increased safety of corn-based foods. Consequently, it is important to determine if residual toxicity of FB₁ 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