SUPERIOR GRAIN SAFETY WITH DESIGNED MYCOTOXIN BINDING PROPERTIES (POWERGRAIN)

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Mycotoxins contamination is a serious problem, resulting in human and livestock poisoning in Sub-Saharan African countries. They are found in foods such as grains and nuts that are important dietary staples in Africa. Current climate changes are enhancing the occurrence of mycotoxin contamination in both food and feed thus posing a threat to future global food security. Mycotoxin management methods used in developed countries are not feasible for developing countries owing to lack of funds and food insecurity. This is a challenge especially among subsistence farming communities where implementation of mycotoxin control and monitoring systems are non-existent or difficult to implement. Unfortunately, due to poor governmental control, corruptions and political instability, grains with high levels of mycotoxins, usually end up in the local markets. Consequently, families vulnerable to poverty and food insecurity consume grains with high levels of mycotoxins due to lack of choice, leading to long-term chronic exposure to mycotoxins. Research effort is therefore is needed to find suitable means to salvage mycotoxin contaminated grains before they end up on the consumers table. Currently research is focusing on two approaches: biotransformation of mycotoxins into less toxic compounds and/or binding of mycotoxins to prevent their bioaccessibility. The Powergrain project is designed to create two pathways aimed at sequestering bioaccessibility of mycotoxins. The first is to enhance the binding of mycotoxin to grain fibres by bioprocessing. The second is to utilize microbial exopolysaccharides produced during bioprocessing to further enhance the mycotoxins binding capacity. These pathways are complementary and can be realized in one food processing operation. The project is brings together researchers from University of Helsinki, Department of Food and Nutrition Science (FAN) and IRSAT DTA (Institut de Recherche en Sciences Appliquées et Technologies), Burkina Faso. Both institutions have strong expertise in cereal technology especially the use of bioprocessing. The research work at DTA, Burkina Faso involves development of processes to improve the nutritional quality and safety of traditional fermented food in Burkina Faso. This collaborative study will therefore reveal the potential of bioprocessed grain fibres and exopolysaccharides as natural mycotoxin binders and their application in traditional fermented food in Burkina Faso.

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