## Project Abstract

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| **Project Title:** | **Natural Photosensitizer for Decontamination of Mycotoxin in Sprouted Cereal Grains** | |
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*Fusarium* mycotoxins are ubiquitous on the basis of mycotoxin contamination global surveillance in cereal foods. The complete prevention of *Fusarium* mycotoxins in raw materials (e.g. barley, wheat) by limiting toxigenic fungal species in the field and during storage is not practical. The most common *Fusarium* mycotoxin contamination in cereal based food, especially in sprouted cereal food is deoxynivalenol (DON), a type B trichothecene produced predominantly by *Fusarium* Spp. In the last decade, there has been an increase in human diet usage of sprouted grains because of the nutritional benefits. The biggest food safety concern is mycotoxin contamination associated with eating grain sprouts. In the past, chemical chlorine-based sanitizers have been applied during processing of sprouts. Recently it has been documented that widely applicable calcium/sodium hypochlorite interacting with organic matter can produce dangerous compounds. Therefore, it is of great urgency to develop a green inhibition mycotoxin production strategy that can be applied in sprouted grains. Recent studies demonstrated that photosensitization is an effective antimicrobial technique against a wide range of microorganisms and fungi with different microbial forms such as spores and biofilm. This light-based technology is based on the interaction between photosensitizer (PS) and visible light, in the presence of oxygen. Light activated PS can react with oxygen to generate reactive oxygen species (ROS), and the ROS can kill the target microorganism without any damage to the host. This proposal seeks to understand the effectiveness of antifungal and mycotoxin inhibitory activity of natural PS *in vitro* and in sprouted cereal grains without negative impact on grain quality.