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My research interest is on food quality and safety control systems, mainly to ensure food hazards and contaminants are prevented or at least reduced to safe levels without compromising the availability, accessibility, stability and utilization of foods.

Main focus is on

- Screening and mitigating contaminants (chemical, microbial and physical) in the food web
- Developing and validating food analytical methods
- Food process optimization and simulation via mathematical models

Between 2016 and 2017, I was opportune to carry out three projects, one of them is already published in reputable journal and the two are under review. Below are the summary of my projects:

I. Modelling the dynamics of toxicity associated with aflatoxins in foods and feeds

In this work, we developed a mathematical model that describes the dynamics of Aflatoxins in plants, animals, and humans. Four equilibrium points were found, and their stability analyses were conducted using threshold quantities. If both are less than one, the standardized toxic limit is not exceeded, while if both are greater than one it is exceeded in both animals and humans. Standardized toxic limit is exceeded in a relevant host (animals or humans) when their respective threshold quantity is greater than one. Numerical simulations were carried out to support the analytic results. The need to use experimental data in the model is also shown. This could ease

Satisfactory harmonization of acceptable standards and facilitate international trade of food and feeds. **Published**

II. Occurrence of *Vibrio parahaemolyticus* in Various Seafood Consumed in North Cyprus

This project investigates the presence of pathogenic *Vibrio parahaemolyticus*, which is one of the most important seafood-borne pathogens in the seafood consumed in North Cyprus. Conventional culture technique was employed for the bacterial identification. Whereas *Vibrio parahaemolyticus* could not be detected in any of the examined seafood samples, other Gram-negative bacteria were detected in the intestines of sea bass from Kyrenia and sea bream from

Morphou regions. Three bacterial species including *Photobacterium damselae* (formerly *Vibrio damsela*), *Providencia rettgeri* and *Pseudomonas fluorescens* were confirmed. **Under Review**

III. Modeling the Impact of Decontamination Technologies on Mycotoxins in Foods and Feeds

In this work, a mathematical model was constructed which describes the dynamics of mycotoxins along feed and food supply chains. The aim of the model was to show the effect of decontamination technologies such as mycotoxins binders in reducing the occurrence and absorption of the mycotoxins. The model consists of five compartments that describes the concentrations of mycotoxins in; plants, feeds with binders, feeds without binders, animals, and animal foods. The dynamics of these concentrations yields a system of nonlinear ordinary differential equation, which in general consists of two strains. Effects of mycotoxins binders were shown through the use of nonlinear incidence rate. Numerical simulation results show that indeed these binders play a role in reducing the propagation of the mycotoxins. **Under Review**