

Microbial Degradation Mechanisms of Mycotoxins

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Mycotoxins are highly toxic secondary metabolites produced by molds that seriously contaminate food and endanger human health. Mycotoxins pose a major health threat to animals and humans [1]. Mycotoxins cause huge economic losses in the food industry and animal husbandry every year [2]. Therefore, comprehensive strategies to control and/or neutralize mycotoxin production in food and feed are needed. For this purpose, physical (high temperature, high pressure, sterilization, cooking, grinding, cleaning, etc.) [3,4] and chemical methods (ozone, ammonia and hydrogen peroxide) [5] can be used. Traditional physical and chemical methods have some limitations such as limited effectiveness, safety problems, loss of nutritional value and taste of food and feed, as well as the need for expensive equipment to apply these techniques. The common disadvantage of these methods is the high difficulty in completely removing toxins and maintaining the sensory quality of food and feed. However, microbial methods offer a suitable alternative for mild reaction conditions, potentially high efficiency, and preservation of the quality of food and feed [6]. Biodegradation of mycotoxins is promising as it works under mild and environmentally friendly conditions. Although significant progress has been made in developing strategies for this, there are still obstacles to be overcome and gaps to be filled in order to design effective mycotoxin management techniques. This is partly due to a lack of understanding of why molds produce mycotoxins. It is seen that many microorganisms are used in research on the biological degradation of mycotoxins. The action mechanisms of these microorganisms can generally be examined under the headings of adsorption, degradation, and transformation. In this paper, these mechanisms will be explained.

Keywords: Mycotoxins; degradation; transformation.

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