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Enzyme steps in aflatoxin biosynthesis

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Summary

Aflatoxins are highly toxic and carcinogenic metabolites, which are produced by some strains of common fungi, mainly *Aspergillus flavus* and *A. parasiticus*. Aflatoxins B₁, B₂, G₁ and G₂ are the major aflatoxins produced by the fungi. Sterigmatocystin is a penultimate precursor of aflatoxins produced by many species including *A. nidulans* and also toxic and carcinogenic. Recently, the majority of enzyme reactions in aflatoxin/sterigmatocystin biosynthesis have been clarified, and the genes encoding the enzymes have been isolated. However, several unknown steps still remain. We have studied these unknown steps by using mainly enzymological methods. We finally clarified the detailed pathways of some of the unknown steps. We will summarize the newest information about the enzyme steps involved in aflatoxin/sterigmatocystin biosynthesis.

Key words : aflatoxin biosynthesis, enzyme reaction, 5'-oxoaverantin, aspertoxin.

Introduction

Contamination of agricultural commodities with aflatoxins is very serious problem all over the world. In order to develop some preventing methods for aflatoxin contamination, biosynthetic mechanism of aflatoxin has been extensively studied. Most of all steps involved in the biosynthesis have been clarified, and more than 18 steps are involved in the pathway^{1,2}. The genes encoding the enzymes have been isolated, and most of the genes are situated within a large 75-kb gene cluster in the fungal genome. Although aflatoxins are mainly produced by certain strains of *Aspergillus flavus* and *A. parasiticus*, sterigmatocystin, a late intermediate in aflatoxin biosynthesis, is the final metabolite in the cognate polyketide pathway in more than 20 kinds of fungal species including *A. nidulans*³. Enzyme pathway for sterigmatocystin formation in *A. nidulans* is the same as that of aflatoxin biosynthesis. However, several steps in



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LIEN RELEASE FOR INCORRECT BUYER(S) - Must be Notarized																			
Secured Party's Name			Subscribed and sworn to before me																
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IS THIS VEHICLE SUBJECT TO SECURITY AGREEMENT(S)? YES <input type="checkbox"/> NO <input type="checkbox"/> IF YES, COMPLETE SECTION BELOW:																			
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Table with 4 columns: Name, Address, City, State, Zip, and Phone.

Aflatoxin b1 sources. Aflatoxin b1 symptoms. Aflatoxin b1 and b2. Aflatoxin b1 foods. Aflatoxin b 1.

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