

Abstract

Aflatoxin (AF) and sterigmatocystin (ST) are toxic secondary metabolites produced by the same biochemical pathway found in several *Aspergillus* spp. The expression of the homologous ST/AF structural gene, *stcU* in *A. nidulans* and *ver-1* in *A. parasiticus*, was affected by external pH of liquid growth media. Both *stcU* and *ver-1* mRNAs appeared earlier and were expressed at higher levels in cultures grown in acidic media (pH 4 to 6) versus neutral (pH 7) and alkali (pH 8) media. Transcript levels correlated with ST/AF production. Visual and spectrophotometric analysis of production of the orange ST/AF intermediate, norsolorinic acid (NOR), also paralleled transcript patterns and indicated that the pH effects were operative in different nitrogen- and carbon-based solid growth media. Five- to 10-fold increases in ST, AF, and NOR were measured in cultures grown in pH 4 or 5 versus pH 8 media. An *A. nidulans* strain carrying a mutation resulting in constitutive activity of the pH regulatory factor, PacC, produced 10-fold less ST than did wild type. The *stcU* transcript was not noticeably affected by pH in this strain. The results suggest a general pattern of pH regulation of ST/AF biosynthesis that may override previously noted carbon and nitrogen effects.