B53

COMBINATION OF SOLVENT AND RADIATION EFFECTS ON DEGRADATION OF AFLATOXIN B1

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Coconut oil contaminated with aflatoxin B1 could be detoxified leaving no residual toxicity by solar radiation[2]. The use of uv radiation for destruction of aflatoxin B1 in organic solvents was reported to produce new fluorescent compounds and residual toxicity[1].

Aflatoxin B1 was exposed to radiation from the sun, uv (365nm, 254nm and fluorescent light in the solvents, chloroform, ethyl acetate and coconut oil. Total degradation of aflatoxin B1 was observed only with the combination of solar radiation and coconut oil. In all other treatments one to several out of four fluorescent compounds, named P, Q, R and S were observed as degradation products along with residual aflatoxin B1. The new fluorescent compounds produced by irradiation of aflatoxin B1 in coconut oil with uv and fluorescent light disappeared when the oil was subjected to solar radiation. When the solar degradation product S obtained with aflatoxin B1 in chloroform was irradiated with solar radiation in coconut oil, the products disappeared.

The chemical treatments with acid and alkali also produced one or several out of the four compounds. The presence of moisture was essential for solar degradation of aflatoxin in coconut oil.

The completeness of degradation by solar radiation may be due to the wide range of radiation energy available which could act on the primary degradation products of aflatoxin B1 leading to further degradation leaving no residual toxicity.

References

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