Hydrolysis of the Glycoside: The glycoside (800 mg) was hydrolysed with 7% ethanolic H_2SO_4 (40 ml) for 4 hr under reflux as usual to yield the aglycone and the sugar, D-glucose [R_f 0.18 in n-BuOH-HOAc- H_2O, 4 : 1 : 5 and co-pc].

Characterization of the aglycone: The aglycone on repeated crystallization from MeOH : Me_2CO mixture afforded brown-coloured needles, mp 308–10° (dec), $[\alpha]_D^{25}$ + 45° (in MeOH), [Found: C, 59.58; H, 3.30; $C_{15}H_{10}O_7$ required, C, 59.60; H, 3.31%]. It formed a pentaacetate (100 mg of aglycone + 6 ml Ac_2O + 5 ml pyridine), mp 130–132° (dec): (Found: C, 59.59; H, 3.90; OAc, 41.90; $C_{25}H_{20}O_{12}$ required; C, 58.59; H, 3.90; 5 × OAc, 41.99%) and penta methyl ether (80 mg of aglycone + 5 ml Me_2SO_4 + 2g K_2CO_3), mp 182–84°, [Found; C, 64.50; H, 5.33, OMe (Zeisel's method), 41.62; $C_{20}H_{20}O_7$ required, C, 64.51; H, 5.37; 5 × OMe, 41.66%].

The authors are thankful to the Directors, Defence Laboratory, Gwalior and C.D.R.I, Lucknow for providing the spectral and micro-analytical data of the glycoside.

22 April 1985

1. Robinson, T., *The organic constituents of higher plants*, Burges, USA, 1963, p. 107.
2. Thomson, R. H., *Naturally occurring quinones*, 2nd Edition, Academic Press, London, 1971, p. 69.
3. Sommigyi, J., *Biochem. J.*, 1952, **19**, 195.
4. Shibata, S., Takido, M. and Tanaka, O., *J. Am. Chem. Soc.*, 1950, **72**, 2789.
5. Feigl, F. and Anger, V., *Spot test in organic analysis*, 7th English Ed., Elsevier, Amsterdam, 1966
6. Briggs, L. H., Jacombs, F. B. and Nicholls, G. A., *J. Chem Soc.*, 1953, 3069.
7. Bloom, H., Briggs, L. H. and Cleverley, B., *J. Chem. Soc.*, 1959, 178.
8. Thomson, R. H., *Naturally occurring quinones*, Butterworths, London, 1957, p. 215.
9. Demuth, G., Hinz, H., Seligmann, O. and Wagner, H., *Planta Medica*, 1978, **33**, 53.

ANTIMICROBIAL ACTIVITY OF MYCOTOXIN STERIGMATOCYSTIN PRODUCED BY *ASPERGILLUS VERSICOLOR*

SHAMSIA BANU and
E. R. B. SHANMUGASUNDARAM,
University Biochemical Laboratories, A.C. College Campus, Madras 600 025, India.

STERIGMATOCYSTIN, a major secondary metabolite of *Aspergillus versicolor*, is a biogenetic precursor of aflatoxin B_1 and has been reported to be toxic to various species of experimental animals[1,2]. Sterigmatocystin is considered to be the most prevalent mycotoxin contaminating foods[3–5]. In the present investigation studies on the anti-bacterial action of sterigmatocystin have been carried out and a method evolved to assay sterigmatocystin by microbiological assay.

A. versicolor strain isolated in this laboratory from contaminated wheat maintained on Czapak-Dox agar slants by periodic subculturing. The liquid medium used for the isolation of sterigmatocystin was prepared as suggested by Rabie *et al*[6]. Sterigmatocystin was extracted by the method of Vorster and Purchase[7] and purified using preparative TLC. It was crystallized using acetone and the product was compared with the authentic sterigmatocystin supplied by Medical Research Council, South Africa.

The isolated sterigmatocystin and authentic sterigmatocystin were tested for their growth inhibiting effects using different micro-organisms like: yeast (*Sacharomyces carlsbergensis, S. cerevisiae*) bacteria (*Staphylococcus aureus* and *Bacillus subtilis*) and fungi (*Penicillium crustosum, P. cyclopium* and *P. patulum*). Microbiological assay was carried out by impregnating antibiotic assay discs with different concentrations of authentic and isolated sterigmatocystin followed by placement of the disc on nutrient agar plates inoculated with the test organisms. The plates were incubated for 12 hr at 30°C.

Table 1 represents the antibiotic action of the isolated and authentic sterigmatocystin. It can be seen from the table that sterigmatocystin acts as a mild antibiotic for both *S. carlsbergensis* and *S. cerevisiae* as well as for all the three strains of fungi used (*P. crustosum, P. patulum* and *P. cyclopium*). However the bacteria *S. aureus* and *B. subtilis* are more sensitive and are inhibited at a low concentration of 150 mcg of the toxin. A concentration of more than 200 mcg of sterigmatocystin per 20 ml medium inhibits growth

Table 1 *Test in yeast, bacteria and fungi for the growth inhibitory effects of authentic and isolated sterigmatocystin.*

Name of the micro-organism.	Dosage in mcg/20 ml medium	Degree and inhibition of growth: Isolated sterigmato-cystin	Degree and inhibition of growth: Authentic sterigmato-cystin
S carlsbergensis	50	--	--
	100	--	--
	150	+	+
	200	+	+
	250	+ +	+ +
S. cerevisiae	50	--	--
	100	--	--
	150	--	--
	200	+	+
	250	+ +	+ +
P. crustosum	50	--	--
	100	--	--
	150	--	--
	200	+	+
	250	+ +	+ +
P. patulum	50	--	--
	100	--	--
	150	--	+
	200	+	+
	250	+ +	+ +
P. cyclopium	50	--	--
	100	--	--
	150	--	--
	200	+	+
	250	+	+ +
S. aureus	50	--	--
	100	--	--
	150	+	+
	200	+ +	+ +
	250	+ +	+ + +
B. subtilis	50	--	--
	100	--	--
	150	+	+
	200	+ +	+ +
	250	+ + +	+ + +

-- absence of inhibition zone.
+ appearance of inhibition zone.
+ + radius of inhibition zone about 0 5 mm.
+ + + radius of inhibition zone about 1 mm.

of almost all the micro-organisms tested.

It is interesting to note that high concentrations of sterigmatocystin are needed to inhibit the growth of micro-organisms The ability of aflatoxin B_1 to inhibit the growth of several micro-organisms is known[8] and a method based on inhibitory effect has been recommended for the assay of aflatoxin B_1. Lillehoj and Ciegler[9] reported that *Bacillus megaterium* which is highly sensitive to aflatoxin B_1 can be used as an assay organism. Patulin is also a potent antibiotic[10].

A high molecular weight glycoprotein has been isolated from *A. nidulans*, culture. This glycoprotein acted synergistically with sterigmatocystin and inhibited the growth of several gram-positive bacteria. Sterigmatocystin contains unsaturated bifuran moiety which is shown to be essential to the antimicrobial action of the synergy[11].

28 March 1985; Revised 1 June 1985

1. van der Watt, J. J., *Sterigmatocystin*, (ed) I F H. Purchase, Elsevier, New York, 1974.
2. Hsieh, D. P. H. and Yang, S. L., *Appl. Microbiol.*, 1975, **29,** 17.
3. Raper, K. B. and Fennell, D. I., *The Genus Aspergillus*. The Williams and Wilkins Co., Baltimore, 1974.
4. Halls, N. A. and Ayres, J. C., *Appl. Microbiol.*, 1973, **26,** 636.
5. Detroy, R. W., Lillehoj, E. B. and Ciegler, A. In: *Microbiol Toxins*-Vol. VI. (eds) A. Ciegler, S. Kadis and S. J. Ajl, Academic Press, New York, 1971.
6. Rabie, C. J., Dublen and Steyn, M., *Appl. Environ. Microbiol.*, 1976, **32,** 206.
7. Vorster, L. J. and Purchase, I. F. H., *Analyst*, 1969, **94,** 694.
8. Burmeister, H. R. and Hesseltine, C. W., *Appl. Microbiol.*, 1966, **14,** 403.
9. Lillehoj, E. B. and Ciegler, A., *Appl. Microbiol.*, 1970, **20,** 782.
10. Reiss, J., *Bull. Environ. Contam. Toxicol.*, 1975, **13,** 689
11. Perry, M. J , Aldonel, M. W. and Holt, G., *J. Appl. Bacteriol.*, 1982, **52,** 83.

MONODICTYS INDICA SP NOV AS A SAPROPHYTE BUT TRANSITORY FUNGUS ON HUMAN SKIN

S. M. SINGH and A. K. BARDE
Department of Biological Sciences,
Rani Durgawati Vishwavidyalaya,
Jabalpur 482001, India

DURING the course of mycological investigation of patients suffering from superficial mycoses, a new