A NARROW-SPECTRUM INHIBITOR PRODUCED BY A SKIN STRAIN OF *MICROCOCCUS LUTEUS*

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Only certain species of micro-organisms are able to colonise healthy human skin; selection may be due to the skin itself or to "antibiotics" produced by resident bacteria. These inhibitors may also have the potential to control populations of sensitive species adjacent to the producer strain (Wright & Terry 1981). A better understanding of the complex ecosystem of healthy skin may help rationalize therapy in disease states where the skin flora is forced into imbalance.

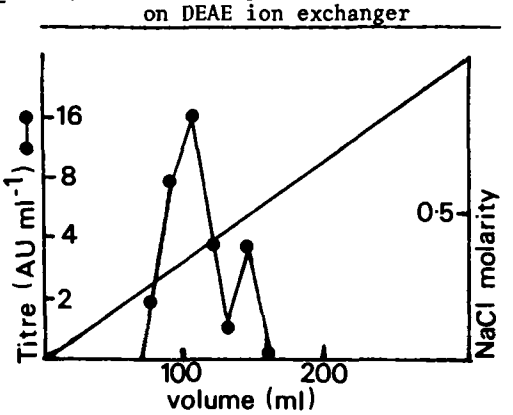
We isolated a strain of *Micrococcus luteus* which inhibited the in vitro growth of an aerobic coryneform from the same skin site but was inactive against most other skin bacteria. Incubation of the producer strain at 42°C resulted in "curing" of inhibitor production and loss of immunity to the homologous inhibitor. This indicated bacteriocin production but transfer of bacteriocinogenic plasmids could not be demonstrated on artificial media (Dastidar et al 1974).

Growing the producer strain on Brain Heart Infusion Agar for 16h at 37°C gave maximum titre (calculated in arbitrary units [AU] ml^{-1}) in the freeze-thaw extract (FTE). 16h FTE was partially purified by precipitation with 50% ammonium sulphate and the redissolved product retained a stable titre for several weeks at 4°C. Further purification was a problem; filtration on various gels resulted in a huge loss of activity or nil recovery. A small amount of inhibitor eluted in the void volume of a Sephadex G-100 column indicating a high molecular weight. Similarly dialysis gave a poor percentage yield (Table 1). Best results were obtained using a desalted sample on a DEAE Sephadex A-25 ion exchanger column eluted with 0.05M Tris buffer pH 6.5 and a continuous gradient of 0-1.0M NaCl. The inhibitor eluted in one major and one minor peak (Fig. 1).

Table 1. Loss of activity on purification

Sample	Total AU inhibitory activity	Percentage yield
FTE	2000	
Ammonium sulphate ppt.	960	48.0
Sephadex G-100 sample	65	3.3
Dialysed sample	120	6.0
DEAE sample	480	24.0

Fig. 1. Elution profile of inhibitor on DEAE ion exchanger



The poor recovery from gel filtration and dialysis may indicate separation from a vital co-factor. The semi-purified inhibitor (DEAE sample, major peak) was resistant to trypsin, chymotrypsin and protease but was destroyed by heating at 75°C. It was bactericidal to the sensitive coryneform. Further study of these narrow-spectrum inhibitors may help to elucidate how skin populations of micro-organisms are controlled.

Dastidar, S.G. et al (1974) J. Gen. Microbiol. 84: 245-252.
Wright, P.A. and Terry, C.S. (1981) J. Med. Microbiol. In Press.

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