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PATHOLOGY

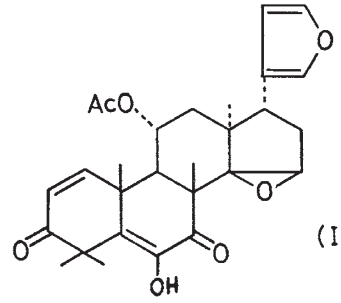
Sensitization to *Khaya anthotheca*

AFRICAN mahogany is a timber which has been used extensively in the furniture trade since the early part of the century. It is derived exclusively from the *Khaya* genus and commercial supplies consist principally of *K. ivorensis* and *K. anthotheca* with smaller amounts of *K. grandifoliola*[1]. The timber is not usually regarded as troublesome as an irritant and indeed, only a very few cases have been reported[2]. It was rather surprising, therefore, to have our attention directed to an outbreak of dermatitis in a factory in which large quantities of the timber were being processed, and it was decided to investigate this more fully.

Seven or eight cases among approximately 75 employees had occurred some two years previously, and the cases recorded here, involving a similar number, occurred in the three months prior to the start of this investigation. Men engaged on finishing operations (sanding, etc.) were mainly concerned, the face, forearms and back of the hands being affected, the eyelids swelling slightly or moderately. The back and sides of the neck were not involved. This pattern suggested a direct contact sensitization to a dust or volatile agent and not a photodermatitis. The eruptions usually subsided with varying (but usually brief) periods away from work and on return the affected men were moved to other jobs and remained clear.

To determine whether one or all three *Khaya* spp. were involved in this sensitization seven employees affected were patch tested to dust prepared from authentic samples of *K. ivorensis*, *K. anthotheca* and *K. grandifoliola* and four of these to wood dust from the factory. (It is not possible to distinguish between the woods comprising the commercial *Khaya* spp. by anatomical examination of the wood alone.) The tests were carried out by the standard method[3] and read at 48 and 96 h. Two other men who had developed a sensitivity to African mahogany (though not employees from the same factory), who were seen as routine patients by one of us (D.S.W.), were also tested. Apart from one 'false case', negative to all woods and extracts (see following), the remaining eight reacted strongly to authentic *K. anthotheca* (three giving a strongly intensified 96-h reaction), and in four cases confirmatory positives were obtained with the actual sawdust from the factory. No reactions were obtained with *K. ivorensis* or *K. grandifoliola*.

The sawdust of *K. anthotheca* was then Soxhlet-extracted successively with light petroleum, ether, acetone and methanol, and the crude extracts were used to patch test six men. In addition patches were also applied of the fully extracted sawdust and of anthothecol (I) (ref. 4), a pure crystalline constituent which has been isolated from *K. anthotheca* but not from the other two species[5]. Five out of the six men reacted to the extracts, often with delayed reactions, there being little variation in the degree of reaction obtained with each extract, though one man reacted only to the petroleum extract. In five cases the completely extracted sawdust (10 per cent in petrolatum molle) gave no reaction; in the sixth case a quickly subsiding positive reaction occurred (probably a false positive). Finally, reactions, some severe, occurred with 1 per cent and 0·1 per cent anthothecol in acetone on all six men tested.



(I)

As controls *K. anthotheca* dust was added to a routine battery of patch tests in ten patients not sensitized by the wood, and in four cases anthothecol (0·1 per cent) patches were also added. No reactions occurred in either group of tests.

From these results it is clear that *K. anthotheca* contains sensitizing substances which can be removed by solvent extraction. The tests with anthothecol, a compound found mainly in the petrol extract, show that this is one of them. However, the equally sensitizing action of the subsequent ether, acetone and methanol extracts suggests that other active constituents may be present, though the presence of traces of anthothecol in each of these extracts cannot be excluded.

The results establish without doubt that *K. anthotheca* dust can cause sensitization and that this was the cause of the trouble in the cases investigated. It should be remembered, however, that African mahogany has been used for many years, apparently without trouble. One possible reason for the present outbreak may be that the consignment contained a particularly high proportion of *K. anthotheca*. Another possibility is that logs unusually rich in the sensitizing constituent(s) may have been included in the consignment. This phenomenon is encountered in teak in which a certain variety rich in deoxylapachol has enhanced irritant properties[6]. The results recorded here should be considered in the light of the amount of African mahogany used annually, which must contain a considerable proportion of *K. anthotheca*. The apparent almost trouble-free use of this timber for many years may indicate that the present outbreak is non-typical, and further evidence is necessary before *K. anthotheca* can be generally regarded as a troublesome irritant timber.

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