CHEMICAL STUDIES OF THE CEPHALIC GLAND SECRETION OF THE TERMITE, AMITERMES EVUNCIFER.

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The chemistry of the cephalic defensive secretions of three Australian Amitermes species has been reported by Moore (1967). We now report on the initial results of an investigation of the cephalic secretion of the African species, Amitermes evuncifer.

The major component of the secretion is an oxygenated sesquiterpene. The mass spectrum is typical of a mono- orbicyclic sesquiterpene and shows a fragment at m/e 109 (83%) and a base peak at m/e 207 ($C_{14}H_{23}O$) which is also the fragment of highest mass in the spectrum. If this fragment represents the loss of a methyl group, the molecular formula is $C_{15}H_{26}O$, representing three degrees of unsaturation.

The n.m.r. spectrum of a crude extract (93% major component) showed signals at δ1.00 (3H), δ1.22 (3H), δ1.25 (3H) and δ1.31 (3H). The singlet at 1.00 can be assigned to an angular methyl, whilst the downfield shift of the other three methyl signals must be due to the oxygen function as the compound is resistent to ozonolysis even at room temperature.

Chemical evidence suggested that the compound was an epoxide. However, gas chromatography of the extract with a phosphoric acid precolumn did not give the expected subtraction of the major component. Instead, the compound was dehydrated and gave a mass spectrum with a base peak at m/e 161 - consistent with the loss of an isopropyl side chain - and fragments at m/e 189 (98%) and m/e 204 (Molecular ion - 89%).

We have tentatively identified the major component of the cephalic gland secretion as the oxide or epoxide of a dimethyl-isopropyl-bicyclo-(4.4.0)-decane. This secretion is markedly different from that of the three Amitermes species investigated by Moore (1967), in which the major components are monoterpene hydrocarbons.

REFERENCES

MOORE, B.P. (1967). Studies on the chemical composition and function of the cephalic gland secretion in Australian termites. J. Insect Physiol. 14: 33-39.