

beiden Substanzgruppen zeigt, daß neben der 6 α -Hydroxygruppe eine $\Delta^{9(11)}$ -Doppelbindung (mit Ausnahme des gesättigten ARG IV) für glycosidisch gebundene Steroide charakteristisch ist, während die freien Steroide sämtlich eine Δ^7 -Doppelbindung enthalten.

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***n*-Paraffins from Japanese Ants**

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P. lamellidens Smith, *F. japonica* Motschulsky, *C. obscuripes* Mayr, *C. japonicus* Mayr, *n*-Paraffins (C_{11} to C_{28})

There are numerous reports of the isolation and the identification of ants pheromone. The Japanese ants pheromone, however, has not been investigated. In the course of the systematic studies of ants pheromone, *n*-hexane extractives of four species of Japanese ants were investigated.

The whole bodies of the worker ants (*C. japonicus* Mayr, *P. lamellidens* Smith, *F. japonica* Motschulsky, *C. obscuripes* Mayr) obtained from Hiroshima Prefecture, Japan were macerated with *n*-hexane for 2 days at room temperature. The organic layer was separated and from the *n*-hexane solution, the solvent was removed under reduced pressure. The residue obtained was extracted with ether. The ether solution was dried with sodium sulfate, and concentrated, leaving oily matters.

The hydrocarbon fraction was obtained from the oily matters by column chromatography on silica gel with *n*-hexane. The oxygen-containing fraction which eluted after hydrocarbon fraction is investigated at present.

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The following *n*-paraffins were isolated from hydrocarbon fraction by column chromatography and Molecular Sieve 5A treatment and detected by gas chromatography (SE-30 5% Chromosorb W, temperature programmed 70-300 °C, 5 °C/min, 150-300 °C, 2 °C/min). Among these constituents, *n*-undecane (main constituents of Japanese worker ants) was isolated by preparative gas chromatography (SE-30 10% at 130 °C) and identified by mass spectrometry (m/e 156 M^+ , 127, 113, 98, 85, 71, 57, 43, 41).

P. lamellidens: C_{11} 60.7%, C_{12} 0.1%, C_{13} 6.9%, C_{14} 0.2%, C_{15} 3.1%, C_{16} 0.2%, C_{17} 1.3%, C_{18} 0.8%, C_{19} 8.3%, C_{20} 0.8%, C_{21} 10.0%, C_{22} 0.2%, C_{23} 2.0%, C_{24} 0.2%, C_{25} 0.7%, C_{26} 1.2%, C_{27} 2.6%, C_{28} 0.7%.

C. obscuripes: C_{11} 96.8%, unknown 3.2%.

C. japonicus: C_{11} 96.2%, C_{13} 0.9%, C_{15} 3.1%, C_{17} 0.1%, C_{19} 0.3%, C_{21} 0.6%, C_{22} 0.1%, C_{23} 0.3%, C_{25} 0.6%.

F. japonica: C_{11} 53.0%, C_{12} trace, C_{13} 9.5%, C_{15} 2.7%, C_{17} 2.1%, C_{18} trace, C_{19} 3.3%, C_{20} trace, C_{21} 5.2%, C_{22} 2.2%, C_{23} 4.0%, C_{24} 3.0%, C_{25} 6.8%, C_{26} 2.2%, C_{27} 6.0%.

It is known that both *n*-undecane and *n*-tridecane were identified as an ants alarm and defense substance of *A. claviger* (Roger) by F. E. REGNIER^{1,2}. The main constituent of *C. japonicus* and *C. obscuripes* is *n*-undecane and other constituents are present to less than 4%. While considerable amount of *n*-tridecane were found in *P. lamellidens* (C_{13} 6.9%) and *F. japonica* (9.5%).

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