

NOTES

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Dialkylpyrrolidines from the Ants *Megalomyrmex cyendyra* Brandão and *M. latreillei* Emery

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Megalomyrmex is an exclusively Neotropical ant ge-
 nus allied to *Nothidris*, *Tranopelta*, and others currently
 placed in the tribe Solenopsidini (Ettershank, 1966;
 Bolton, 1994). In a recent revision of the genus,
 Brandão (1990) recognized 31 species and four species
 groups. The distribution of *Megalomyrmex* extends
 from tropical Mexico to southern Brazil. Recently,
 saturated nitrogen heterocycles, similar to those found
 in *Monomorium* and *Solenopsis* species, have been
 reported in four *Megalomyrmex* species (Jones et al.,
 1991a, 1991b). In *Monomorium* and *Solenopsis* these
 venom components are species specific (Jones et al.,
 1988; Vander Meer, 1988).

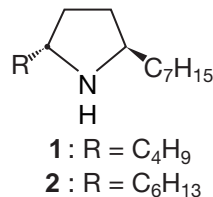
Both *M. cyendyra* Brandão and *M. latreillei* Emery
 belong to the *leoninus* group as defined by Brandão
 (1990). Its members are free living species that nest in
 preformed cavities in rotten wood or in soil beneath
 stones. The workers apparently forage primarily on
 the ground and within leaf litter. They also forage into

shrubs and are known to tend membracid nymphs.
 True queens are lacking and the reproductive function
 is assumed by gamergates.

Workers of *M. cyendyra* were collected
 in Colombia: Municipio de Dagua-Corregimiento,
 Borrero Ayerbe, Departamento del Valle, July 1997,
 and were placed in vials of 100 % methanol. Workers
 of *M. latreillei* were collected in Ecuador: Garza Cocha-
 Añagu, 175 km ESE of Coca, Provincia de Sucum-
 bios, 12 Aug. 1994, and were placed in small vials with
 methylene chloride. Voucher specimens of both spe-
 cies are deposited in the collections of the Natural
 History Museum of Los Angeles County.

Gas chromatographic-mass spectral analyses were
 performed in the EI mode with a Shimadzu QP-5000
 equipped with a 30-m × 0.32-mm RTX-5 column. The
 GC was programmed from 60 to 250 °C at 10 °C/min.
 The alkaloids were identified by direct comparison of
 the ant extracts with synthetic samples available from
 previous studies (Jones et al., 1989).

Analysis of the extracts from both species showed
 the presence of *trans*-2-butyl-5-heptylpyrrolidine (**1**)
 and *trans*-2-heptyl-5-hexylpyrrolidine (**2**). These com-
 pounds have been



found in ants (Jones et al., 1989), and their stereochem-
 istry in both species was established by direct GC
 comparison with synthetic samples. In *M. cyendyra* the
 ratio of **1** to **2** was 20:1, while in *M. latreillei* it was 1:1.
 Additionally, traces (<0.5 % of total alkaloids) of the
 1-pyrrolines derived from **1** and of 2-heptyl-5-(5-
 hexenyl)-pyrrolidine were detected in the extracts of

TABLE 1. Venom alkaloids from *Megalomyrmex* species.

Compounds	<i>leoninus</i> group				<i>modestus</i> group		
	<i>M. cyendyra</i>	<i>M. foreli</i>	<i>M. latreillei</i>	<i>M. leoninus</i>	<i>M. goeldii</i> Workers	<i>M. goeldii</i> ergatoids	<i>M. modestus</i>
<i>trans</i> -2-Butyl-5-heptylpyrrolidine	++	+	++	++	++	+	
<i>trans</i> -2-Butyl-5-pentylpyrrolidine					t	++	
<i>trans</i> -2-Hexyl-5-pentylpyrrolidine					+	++	
<i>trans</i> -2-Heptyl-5-hexylpyrrolidine	+		++		++	+	
(5E,8E)-3-butyl-5-hexylpyrrolizidine							++
2-Butyl-5-heptyl-5-pyrroline		++					
2-Butyl-5-(E,1-heptenyl)-5-pyrroline		++					
2-Butyl-5-(E,E,1,3-heptadienyl)-5-pyrroline		++					

++ = major component, + = minor component, t = trace

M. cyendyra. Neither was present in *M. latreilli*. Conversely, traces (<0.5 % of total alkaloids) of the N-methyl analogs of **1** and **2** were detected in *M. latreilli*.

The pyrrolidines found in both species of ants are well known venom components of other myrmecine ants (Jones et al., 1989). Pyrrolidine **1** is a venom component in all of the previously examined *Megalomyrmex* species (Table 1) except *M. modestus* Emery, while pyrrolidine **2** has only been detected in *M. goeldii* Forel in this genus (Jones et al., 1991a,b). The venom chemistry of *M. cyendyra* and *M. latreillei* resembles that of *M. goeldii* workers, which are members of the *modestus* species group. Perhaps simple mixtures of saturated dialkylpyrrolidines are most typical of the genus, and species such as *M. foreli* Emery or *M. modestus*, having more unique alkaloids, are the exception. Until a higher proportion of species are examined, it is not possible to assign taxonomic significance to the present results.

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