

dimethyl piperidine was isolated from *Pachycondyla tarsata* (4, 35). Pyrazines, which are frequently found in formicid ants, are formed from amino acids. This group of chemicals has been repeatedly reported from the venom of ponerine and myrmecine species. For example, small amounts of 2,5-dimethylpyrazine and 2,5-dimethyl-3-ethylpyrazine were found in the venom gland of *Pachycondyla obscuricornis* (4).

Venom gland components of only 19 out of 200 described species of the genus *Pachycondyla* have been so far examined. Peptides and proteins were found in 15 species; however, in some cases no explicit reference was made to the involved compounds (27). Proteins were identified from the venom secretions of *P. villosa* (36), *P. insularis* and *P. tridentata* (37), *P. apicalis* (35) and *P. tarsata* (4). Orivel and Dejean (27) reported that *Pachycondyla* venom contained mostly histolytic and neurotoxic peptides. The occurrence of peptides was reported in the venom secretions of *P. sennaarensis* and *P. obscuricornis* (27), but it could not be verified by subsequent studies of other workers (our unpublished data from HPLC and in reference 4). Such differences may reflect natural variation among geographic populations of *P. sennaarensis*. This might also provide an explanation for the different severity of symptoms among stung persons on the two sides of the Persian Gulf. The venom gland components of *P. chinensis* are only partially described and appear to contain amines, formic acid, histamines, hyaluronidase, phospholipases and terpenes (13).

Another remarkable chemical detected in our study was 2,6,10-trimethylundecan-2,9-dien-4-one, which along with its other structurally similar sesquiterpenoids was once reported to originate from female cuckoo bees, *Nomada lathburiana* (29). It allegedly plays a repellent or defensive role, although no supporting test was carried out. The phenolic compound Phenol-2,4-bis (1,1 dimethylethyl) has been reported in the mycelia of *Tuber borchii* (Tuberales) while no record exists on its occurrence in insects (38). Extremely low amounts of this compound could be detected in the colonies of Abshekan village, but was totally absent among the Fajr Park specimens which had indicated a considerable titer of 2,6,10-trimethylundecan-2,9-dien-4-one.

Pentadecan-2-one has been repeatedly found in the abdominal glands of ants. Of 15 examined species of the genus *Myrmecocystus*, ten were found to bear pentadecan-2-one in the Dufour glands of workers (39). Similarly, variable volumes of pentadecan-2-one were reported in different species within *Cataglyphis bicolor* group