Remarkable Components of Abdominal Glands

Abdominal gland secretions of *P. sennaarensis* are mainly a complex mixture of linear and methyl-branched hydrocarbons. The alkane series starts as undecane and continues to heptacosane. Heptadecane, nonadecane, pentadecane and lower concentrations of hexadecene, hexadecane and undecane constitute the highest volume of the glandular components (Table 1).

Abdominal secretions also include small amounts of terpenoids, mostly identified as 2,6,10-trimethylundecan-2,9-dien-4-one ($C_{14}H_{22}O$), 2,5-piperazinedione and trimethyl pyrazine ($C_7H_{10}N_2$), which are all accompanied by straight-chain hydrocarbons. EI mass spectra of pyrazine (Figure 4A) revealed major fragments at *m/z* 42 and 81 with the molecular ion (M^+) at *m/z* 122. Mass spectra of $C_{14}H_{22}O$ (Figure 4B) indicated characteristic fragments at *m/z* 84 and 124 with M^+ at *m/z* 206. Base peaks of 2,5-piperazinedione appeared correspondingly at *m/z* 30, 114, 71 and 28 (Figure 4C).

Interestingly, a minute amount of another structure of $C_{14}H_{22}O$ was also eluted in some of our collected specimens with mass spectral (EI mode) fragments at *m/z* 191 and 57 with the molecular ion (M^+) at *m/z* 206 (Figure 4D), which are characteristics of phenol-2,4-bis (1,1 dimethylethyl). Confirmation was made via a comparison to the retention time and mass spectra of the injected authentic compound. The gland secretions also contained the methyl ketone, pentadecan-2-one, ($C_{15}H_{30}O$) with the mass spectra characteristic fragments at *m/z* 58, 59, 43 and M^+ at *m/z* 226 (Figure 4E). The spectrum and retention times of the authentic material that we obtained were compared and proven to be the same as that of the ant. There was also a compound with base peaks at *m/z* 55, 82, 96 and 69 and a molecular mass of 278 (Figure 4F). Identification of this compound could not be confirmed, but mass spectra were consistent with a formula $C_{20}H_{38}$. Although they appeared in trace volumes, 2-tridecyl acetate, dodecyl butyrate and 2- methyl hexadecanal (Table 1) were among the other interesting compounds that could be detected in the abdominal gland secretions of *P. sennaarensis*. Surprisingly, no peptide elution was monitored through a series of HPLC experiments.