**Embriatermes neotenicus**

**Chemistry of body washes**
In solvent extracts of primary queens, secondary queens and eggs, we detected large quantity of a volatile compound.

The compound was completely absent in kings and in sterile castes.

**Headspace analysis**
In the next step, we analyzed headspace emanations of the queens and other castes. The same volatile proved to be present in the gaseous emissions of the queens.

**Fertility-related differences**
In young non-breeding queens this volatile was absent and its quantity increased with the level of physogastry of the queens.

**Chemical identity**
Based on its retention characteristics and mass spectra, the volatile compound was identified as sesquiterpene alcohol (E)-nerolidol.

**Antennal perception of (E)-nerolidol**
When searching for the function of (E)-nerolidol, we performed a series of electroantennographic analyses showing that the compound is perceived by the antennae and brain of workers.

**Silvestritermes holmgreni**

**Chemistry of body washes**
To our surprise, we discovered the same volatile compound is perceived by queens of another syntermitine, *Silvestritermes* (Armitermes) holmgreni.

**Silvestritermes minutus**

**Chemistry of body washes**
Another volatile compound, not yet fully identified, has been detected to be produced by the queens of a related species *Silvestritermes* (Armitermes) minutus. Its retention characteristics and mass spectra suggest that it differs, but not dramatically, in its structure from (E)-nerolidol.

**Conclusions**
Primary and secondary queens of *Embriatermes neotenicus* produce large amounts of (E)-nerolidol, a sesquiterpene alcohol, which is absent in all other castes. The quantity of the compound emitted by the queens appears to be correlated with their reproductive status; it increases with the level of physogastry and thus fertility of the queens while it is absent in young non-breeding queens. Interestingly, we identified this same compound also in the extract of eggs. Our electrophysiological experiments suggest that the compound is perceived by *E. neotenicus* workers. We observed this same volatile to be produced by the queens of another syntermitine, *S. holmgreni*. The queens of the third studied species, *S. minutus*, also produce large amounts of a volatile compound, not yet fully identified, close but not identical in its structure with (E)-nerolidol. Multiple functions can be hypothesized for these queen- and egg-specific volatiles, ranging from queen and egg recognition signal to primer pheromone function preventing the nestmates from reproduction. These putative functions are not mutually exclusive and should all be considered in the future research.

**References**

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