



Conference Abstract

Comparison of methodologies for the extraction of snakes' (Reptilia: Serpentes) skin secretions and preliminary results on the presence of pheromones

Angel Dyugmedzhiev[‡], Kostadin Andonov[§], Borislav Naumov[‡], Simeon Lukanov[‡], Miroslav Slavchev[‡], Emiliya Vacheva[|], Nikola Stanchev[¶], Georgi Popgeorgiev[|], Deyan Duhalov[#], Yurii Kornilev^{|,□}, Daniela Nedeltcheva-Antonova[«]

[‡] Institute of Biodiversity and Ecosystem Research-BAS, Sofia, Bulgaria

[§] WWF-Bulgaria, Sofia, Bulgaria

[|] National Museum of Natural History-BAS, Sofia, Bulgaria

[¶] Sofia University "St. Kliment Ohridski", Sofia, Bulgaria

[#] Bul Bio, Sofia, Bulgaria

[□] Department of Integrative Zoology, University of Vienna, Vienna, Austria

[«] Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria

Corresponding author: Angel Dyugmedzhiev (angel_dyugmedjiev@abv.bg)

Received: 10 Sep 2019 | Published: 11 Sep 2019

Citation: Dyugmedzhiev A, Andonov K, Naumov B, Lukanov S, Slavchev M, Vacheva E, Stanchev N, Popgeorgiev G, Duhalov D, Kornilev Y, Nedeltcheva-Antonova D (2019) Comparison of methodologies for the extraction of snakes' (Reptilia: Serpentes) skin secretions and preliminary results on the presence of pheromones. ARPHA Conference Abstracts 2: e46456. <https://doi.org/10.3897/aca.2.e46456>

Abstract

During this preliminary study, 26 specimens from 8 different snake species were examined. Three methodologies for extraction of skin secretions by immersion of skin in n-hexane were used:

1. immersing the whole body of live individuals for approximately 1 min in the field (n = 13),
2. immersing the whole body of dead specimens (found freshly killed on road) for 24 h (n = 4), and
3. soaking a shed skin for 24 h (n = 9).

We did not immerse the head and tail to avoid contamination of the samples. All samples were collected during snakes' active period (February – first half of June) and were analyzed by gas chromatography-mass spectrometry (GC/qMS).

Based on the prevalence in the fraction of long-chained hydrocarbons, lipids or lipids with ketones we can separate the samples in three categories. The lipid fractions were present mainly in the shed skin samples, while the long-chained hydrocarbons dominated in the live specimens. According to the literature, ketones are the main component of the snakes' pheromone communication. We found ketones in five samples, three live and two dead specimens, from five different species (*Vipera ammodytes* (Linnaeus, 1758), *V. berus* (Linnaeus, 1758), *Dolichophis caspius* (Gmelin, 1789), *Natrix natrix* (Linnaeus, 1758), and *Platyceps najadum* (Eichwald, 1831)). No ketones were found in the shed skin extracts. Ketones were found only in adults, both males and females. Presence of ketones was observed only for the period from the end of May to the beginning of June.

Based on the preliminary results, we can suggest that secretion extraction from live specimens in the field could prove a valuable method in studies on snake pheromones in addition to the already developed methodologies. We speculate that the pheromones are present only in the reproductive and probably post-reproductive period. However, further research with larger sample size is required.

Keywords

communication, ketones, lipids, reproduction, *Vipera*, GC/MS.

Presenting author

Yurii Kornilev

Presented at

Vth International Congress on Biodiversity: „Taxonomy, Speciation and Euro-Mediterranean Biodiversity“

Funding program

Fund for Scientific Research, Ministry of Education and Science, grant КП-06-H21/11 / 14.12.2018