

From Persian Gulf to Indonesia: Interrelated phylogeographic distance and chemistry within the genus *Peronia* (Onchidiidae, Gastropoda, Mollusca).

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Abstract

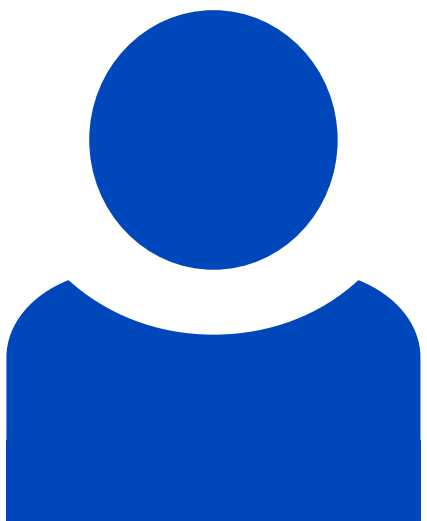
The knowledge of relationships between taxa is essential to understand and explain the chemical diversity of the respective groups. Here, twelve individuals of the panpulmonate slug *Peronia persiae* from two localities in Persian Gulf, and one animal of *P. verruculata* from Bangka Island, Indonesia, were analyzed in a phylogenetic and chemotaxonomic framework. Based on the ABGD test and haplotype networking using COI gene sequences of *Peronia* specimens, nine well-supported clades were found. Haplotype network analysis highlighted a considerable distance between the specimens of *P. persiae* and other clades. Metabolomic analysis of both species using tandem mass spectrometry-based GNPS molecular networking revealed a large chemical diversity within *Peronia* of different clades and localities. While *P. persiae* from different localities

showed a highly similar metabolome, only few identical chemical features were found across the clades. The main common metabolites in both *Peronia* species were assigned as polypropionate esters of onchitriols and ilikonapyrones, and osmoprotectant amino acid-betaine compounds. On the other hand, the isoflavonoids genistein and daidzein were exclusively detected in *P. persiae*, while cholesterol and conjugated chenodeoxycholic acids were only found in *P. verruculata*. Flavonoids, bile acids, and amino acid-betaine compounds were not reported before from Onchidiidae, some are even new for panpulmonates. Our chemical analyses indicate a close chemotaxonomic relation between phylogeographically distant *Peronia* species.

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