PALYNOLOGY
2023, VOL. 47, NO. 2, 2149631
https://doi.org/10.1080/01916122.2022.2149631

Biostratigraphy and palaeogeographic implications of Ordovician and Silurian chitinozoa from the High Zagros Mountains, Northern Persian Gulf, Iran

Mohammad Ghavidel-Syooki

Institute of Petroleum Engineering, School of Chemical Engineering, College of Engineering, University of Tehran, Tehran, Iran

ABSTRACT

A siliciclastic succession is exposed at the Faraghan mountain, northern Persian Gulf, southeastern Iran. A detailed, high-resolution palynological analysis was performed on the Zardkuh, Seyahou, Dargaz, and Sarchahan formations to verify the exact age and palaeogeographic position of the High Zagros Mountains. Two hundred surface samples from this succession were collected and analysed. Most samples yielded abundant and well-preserved chitinozoans, acritarchs, scolecodonts, and cryptospores. Fifty-three chitinozoan species (21 genera) were identified that permitted to establish the *Eremochitina brevis, Desmochitina ornensis, Belonechitina henryi, Siphonochitina formosa, Belonechitina robusta*, *Tanuchitina fistulosa*, *Acanthochitina barbata*, *Armoricochitina nigerica*, *Ancyrochitina merga*, *Tanuchitina elongata*, *Spinachitina oulebsiri,* and *Spinachitina fragilis* biozones in ascending stratigraphic order as was previously established for the North Gondwana Domain. These results indicate that the Zagros Mountain Belt of Iran was part of the North Gondwana palaeo-province during the Ordovician-Silurian. On the other hand, these chitinozoan biozones and other associated fauna (e.g. graptolites, trilobites, brachiopods, and conodonts) suggest a late Early Ordovician (Floian) to Early Silurian (Rhuddanian) age range, with unconformities, for this succession. Based on chitinozoan biozones, a distinctive hiatus is present between the Zardkuh and Seyahou formations at Faraghan mountain, which corresponds to the absence of *jenkinsi-tanvillensis* chitinozoan biozones, encompassing the latest Middle Ordovician (latest Darriwilian: stage slice Dw3) and the early Late Ordovician (Sandbian: the stage slices Sa1 to Sa2 and time slices 5a to 5b). Two chitinozoan species were erected: *Belonechitina bifurcaspina* sp. nov., *Angochitina persianense* sp. nov., and *Eremochitin*a cf. *brevis* was left in open nomenclature.

HIGHLIGHTS

- Siliciclastic deposits of the Faraghan mountain yielded rich chitinozoan assemblages.
- Fifty-three identified chitinozoan species resulted in 12 chitinozoan biozones.
- Kerogenous black shales contain both the *S. oulebsiri* and *N. persculptus* biozones.
- A hiatus was identified, corresponding to the Dw3 and Sa1–Sa2 stage slices.
- Two new taxa: *B. bifurcaspina* and *A. persianense,* are proposed.

KEYWORDS

Biostratigraphy; palaeogeography; chitinozoan biozones; northern Gondwana landmass; northern Persian Gulf; Iran