

**THE AGE OF THE KONRADSHHEIM LIMESTONES (GRESTEIN UNIT, AUSTRIA)**

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The Gresten unit is one of the units situated in front of the Northern Calcareous Alps (NCA) [1]. The most characteristic lithofacies are the Gresten Beds, with arkoses, sandstones and shales, intercalated by coal in the lower part (Hettangian), and calcareous deposits in the upper part (Sinemurian-Toarcian). The Gresten facies in the foreland of the NCA is known only from the Gresten unit and from several boreholes at the basement of the Molasse Zone in the eastern part of Lower Austria [2]. However, similar deposits are developed also within the western part of the Pieniny Klippen Belt and in the Apuseni Mts [3].

The Gresten Beds of the Gresten Unit are covered by Aalenian spotted marls, the Posidonia Marls (Bajocian - Callovian) and radiolarites (Oxfordian). The Malmian and Neocomian sediments are represented mainly by siliceous Aptychus limestones and spotted marls similar to the deposits from the NCA. In the vicinity of the village Konradsheim and in the Pechgraben area the Konradsheim Limestones were also included into the Malmian sediments. The Konradsheim limestones are developed usually as thick to very thick self- and matrix supported conglomerates and sedimentary breccias, usually displaying a gradation. The clasts are represented generally by fragments of limestones, up to tens of centimetres in diameter. The Malmian age of the Konradsheim Limestones in the Konradsheim area (NÖ) was established [4] on the basis of a macrofauna and in the Pechgraben area (OÖ) it was based on the occurrence of Tithonian Aptychus and Ammonites in the conglomerates [5]. In general, the Malmian age of the Konradsheim Limestones is accepted [1]; however, Schnabel [6] mentioned the occurrence of Cretaceous foraminifera in shales connected with the Konradsheim Limestones near Konradsheim.

The present study was carried out in two areas: on the Castle hill in the Konradsheim village and in the Pechgraben area. Near Konradsheim several samples were collected from the intercalations of greenish marls between the Konradsheim conglomerate layers, exposed on the lower bend of the road to the church. In the Pechgraben area two exposures were sampled. Several samples were taken from marly limestones and marls intercalated with the Konradsheim conglomerate layers, exposed in an abandoned quarry. The quarry is situated in the area Hohenberg, along the road from Stangl to Kohlgraben. Other samples were collected from the area of Arthofer from the big exposure on road bend near Dichlberger, where a complex of conglomeratic Konradsheim Limestones lay above the folded Scheibsbach Beds. Samples were collected from conglomerates and marly shales.

Biostratigraphical investigations of pelitic intercalations within the Konradsheim Limestones, both, from the Konradsheim and Pechgraben area, that contain foraminifera assemblages with *Caudammina (Hormosina) ovulum* (Grzybowski), explicitly show that those limestones are of Cretaceous age, not older than Barremian [7]. The age of a part of the Konradsheim Limestones, younger than previously accepted is also supported by the occurrence of the Radiolaria assemblages of Early Cretaceous age in clasts from conglomerates in the Arthofer area. The co-occurrence of *Pseudoaulophacus (?) florealis*, *Triactoma luciae*, *Pseudoeucyrtis (?) fusus*, *Sethocapsa leiostraca*, *Podobursa triacantha* and *Parvicingula mashitaensis* indicate an age not older as Early Valanginian. The Radiolaria assemblage represents a low-latitude Tethyan microfauna. The age of rounded, redeposited clasts that contain the Radiolaria is older than the age of the host rocks. A similar co-existence of Malmian and younger pebbles were also described from conglomerates of the Gresten Unit near Scheibbs [8]. Our results imply that the monomictic conglomerates build up mainly of calcareous pebbles, described as the Konradsheim Limestones, could be deposited during different periods of Late Jurassic and Cretaceous.

The sedimentary structures of the conglomerates from Konradsheim Limestones show that they could represent deposits of high concentration turbidity currents and debris flows, that filled submarine channels. The additional occurrence of the Konradsheim Limestones as blocks within marly deposits imply that, in some cases, they can also represent resedimented bodies (olistolithes). The provenience of material is open for discussion, however, a source area for a part of the radiolarian limestones was probably connected with the Tethyan realm. The observed similarity between conglomerates of the Konradsheim Limestones from the Gresten Klippen and a part of a sedimentary breccia, built mainly from limestones clasts, from the Gruber quarry in the northeastern part of the Tauern Window (Grossarl valley) implies a possibility of a connection between both conglomerates.

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