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Microfacies assemblages and diagenetic framework of the Lower Eocene Sakesar limestone, Karoli area, Central Salt Range, Sub-Himalayas of Pakistan

Abdur Rauf Nizami, Abdul Qayyum, Arslan Shahbaz, Zahid Imran Bhatti and Tahir Shahzad Pirzada
Institute of Geology, University of the Punjab, Lahore

A detailed study has been done to establish the microfacies assemblages, diagenetic framework and biostratigraphy of the Lower Eocene Sakesar Limestone from the Karoli area in the Central Salt Range. The limestone is composed of bioclastic microfacies only. Bioclastic wackestones and bioclastic packstones have been recorded with repetition at different stratigraphic levels and with various ecological associations of biota. The microfacies are mainly comprised of shells and fragments of different foraminiferal species. While, shells and bioclasts of Brochiopods, Gastropods, Pelecypods, Echinoderns, Broyozoa, Sponges, Corals, Blue-Green Algae and Red Algae are also present in these microfacies. Based on ecological associations, 13 lithofacies have been identified. Biostratigraphical investigations revealed that the limestone is host of a number of biostratigraphically important benthonic larger foraminiferal species belonging to the genera: Nummulites, Assilina, Lockhartia, Alveolina and Opercolina. The diagenetic framework has also been elucidated and dissolution, replacement, alteration, dolomitization, micritization, various cement morphologies, micritic envelopes, open and filled fractures (calcite veins), stylolites and solution porosities have been recorded. These investigations led towards the conclusion that the Sakesar Limestone was deposited mainly in the subtidal and inertial zones of open shelf. However, a small part of it was deposited in the restricted shelf environment.