

PALAEOBIOLOGY AND BIOSEDIMENTOLOGY OF THE STROMATOLITIC BUXA DOLOMITE, RANJIT WINDOW, SIKKIM, NE LESSER HIMALAYA, INDIA

V. C. TEWARI

Wadia Institute of Himalayan Geology, Dehradun-248001, Uttaranchal, India and The Abdus Salam International Centre for Theoretical Physics 34136, Trieste, Italy

Abstract. The Mesoproterozoic (Riphean) stromatolite taxa are recorded from the Buxa Dolomite of the Ranjit Window, Sikkim Lesser Himalaya, India. The Riphean characteristic taxa are *Omachtenia*, *Colonnella columnaris*, *Kussiella kussiensis*, *Conophyton cylindricus*, *C. garganicum*, *Rahaella elongata* Tewari, *Jacutophyton*, *Baicalia nova*, *Tungussia*, *Jurusania*, *Inzeria*, *Gymnosolen*, *Minjaria*, *Stratifera*, and *Gongylina*. The Neoproterozoic-Terminal Proterozoic (Vendian) stromatolite assemblage *Paniscollenia*, *Aldania*, *Tungussia*, *Linella*, *Colleniella*, *Linocollenia*, *Boxonia*, linked *Conophyton*, *Conistratifera*, *microstromatolites*, *Stratifera*, *Irregularia*, *Nucleella*, digitate stromatolites and oncolites are well developed in the Buxa Dolomite, Ranjit Window, Sikkim and its equivalents (Menga Limestone, Dedza Limestone and Chillipam Limestone) in the adjoining Arunachal and Bhutan Lesser Himalaya. The Mesoproterozoic to Terminal Proterozoic stromatolite diversification has been recorded for the first time from the Buxa Dolomite of the Sikkim Lesser Himalaya, India. The palaeobiological and biosedimentological significance of the stromatolites in the Buxa Dolomite has been discussed.

1. Introduction

The Buxa Group in the Northeastern Lesser Himalaya, India is well represented by dolomites, limestones, cherty stromatolitic-oolitic-intraclastic dolomite, calcareous quartzite and black carbonaceous shales in Arunachal and Sikkim areas (Acharyya, 1974; Tewari, 2001, 2002, 2003). The stromatolitic dolomite sequence is 800 m. thick in the Ranjit Window section of the Sikkim Lesser Himalaya.

The distribution of stromatolite assemblages, morphological variations and the palaeoenvironment of deposition has been established. The detailed study of the stromatolite morphology, microstructure, microfabrics and associated microbiota in the stromatolitic and bedded cherts suggests a Lower Riphean to Terminal Proterozoic age for the Buxa Dolomite in the Sikkim Lesser Himalaya. Tewari (2003) has done integrated sedimentological, palaeobiological, carbon and oxygen isotopic and Laser Raman Spectroscopic studies of the Buxa Dolomite from Arunachal Lesser Himalaya and has suggested a Neoproterozoic to Pre Cambrian—Cambrian boundary transition in the eastern lesser Himalaya.

2. Palaeobiology and Biosedimentology of the Buxa Dolomite

Palaeobiological remains discovered from the petrographic thin sections of the black cherts associated with the stromatolitic dolomites of the Buxa Group in Ranjit Window, Sikkim are organic walled microfossils (*Leiosphaeridia*, *Obruchevella*, *Myxococcoides*, *Siphonophycus*, *Eomycetopsis*, *Micrhystridium*, and *Acanthomorphic acritarchs*). The sedimentological studies of the stromatolites and sedimentary structures suggest that Buxa Dolomite was deposited in intertidal to subtidal, sandy intertidal and lagoonal environment. The carbon and oxygen isotope analysis of the Buxa Dolomite from the Ranjit Window shows that carbon isotope ratios ($\delta^{13}\text{C}$) vary from -1.4 to $+1.0$ (PDB) and oxygen isotope values ($\delta^{18}\text{O}$) range from 18.9 to 23.9 (SMOW). The isotopic data also supports a shallow marine depositional environment. The geochemical analysis of stromatolitic carbonates has shown 16 to 22% MgO and 14 to 31% CaO. Laser Raman Spectra has shown the shift in wave number at 1100 cm and confirms the presence of amino acids (biomolecules).

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4. References

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