



## ***APECTODINIUM* ACME AND PALYNOFACIES CHARACTERISTICS IN THE LATEST PALAEOCENE-EARLIEST EOCENE OF NORTHEASTERN INDIA: BIOTIC RESPONSE TO THE PALAEOCENE-EOCENE THERMAL MAXIMA (PETM) IN LOW LATITUDE**

VANDANA PRASAD<sup>\*1</sup>, RAHUL GARG<sup>#1</sup>, KHOWAJA-ATEEQUZZAMAN<sup>1</sup>, INDRA BIR SINGH<sup>2</sup> and MICHAEL M. JOACHIMSKI<sup>3</sup>

<sup>1</sup>BIRBAL SAHNI INSTITUTE OF PALAEOBOTANY, 53 UNIVERSITY ROAD, LUCKNOW – 226007

<sup>2</sup>DEPARTMENT OF GEOLOGY, LUCKNOW UNIVERSITY, LUCKNOW – 226007

<sup>3</sup>INSTITUT FÜR GEOLOGIE UND MINERALOGIE, SCHLOSSGARTEN, 91054 - ERLANGEN, GERMANY

### **ABSTRACT**

Ubiquitous predominance of *Apectodinium*, a presumably heterotrophic, warm water dinoflagellate, is one of the most prominent biotic response in the marginal marine realm to the warming event known as the Palaeocene-Eocene Thermal Maxima (PETM). Global records of *Apectodinium* dominated assemblages associated with PETM Event are known mainly from the mid-high latitudes. The low latitude records of the *Apectodinium* acme coinciding with a negative carbon isotope excursion (CIE) and combined with palynofacies data from the coastal marine succession in the Khasi Hills, northeastern India (occupying equatorial palaeolatitudes) are discussed in relation to the PETM. The association of *Apectodinium* acme with rich and varied terrestrial organic matter indicates lowered salinity and enhanced coastal runoff in response to high precipitation leading to increased river discharge. High input of organic detritus raised surface water productivity in the stressed marginal coastal sea, conducive to proliferation of *Apectodinium* and other related early wetzeliellids. It is presumed that the environmental impact of PETM in the equatorial region was in the form of intense warm and humid climate with enhanced precipitation.

**Key words:** Palaeocene-Eocene Thermal Maxima (PETM), *Apectodinium*, Palynofacies, Palaeoenvironment, Northeastern India