



AGE-DIAGNOSTIC DINOFLAGELLATE CYSTS FROM THE LIGNITE-BEARING SEDIMENTS OF THE VASTAN LIGNITE MINE, SURAT DISTRICT, GUJARAT, WESTERN INDIA

RAHUL GARG^{1*}, KHOWAJA-ATEEQUZZAMAN¹, VANDANA PRASAD¹, S.K.M. TRIPATHI¹,
I.B. SINGH², A.K. JAUHRI² and S. BAJPAI³

1. Birbal Sahni Institute of Palaeobotany, Lucknow- 226007

2. Department of Geology, University of Lucknow, Lucknow- 226007

3. Department of Earth Sciences, Indian Institute of Technology, Roorkee- 247007

* E-mail: rahulbsip@gmail.com

ABSTRACT

The lignite-bearing succession (corresponding to Cambay Shale) of the Vastan lignite mine, Gujarat has been extensively studied in the past few years for its rich vertebrate fauna. However, no age-diagnostic fossils with chronological significance are reported. In the present study, several dinoflagellate cysts from different levels in the lignite-bearing sediments (Succession A) of the Vastan lignite mine are identified which are age diagnostic. Occurrence of *Muratodinium fimbriatum*, *Heteraulacacysta granulata* and *Operculodinium severinii* in the lower part indicates an age not older than late Thanetian/Sparnacian (~55 Ma). Presence of rich *Kenleyia* complex including LAD of *Kenleyia lophophora* in the upper half of the succession indicates basal Ypresian age (~54 Ma). Occurrence of *Lanternosphaeridium lanosum* in the upper part suggests an age not younger than middle Ypresian (~52 Ma) for the topmost part of the Vastan succession. Thus, in terms of traditional European stages, the succession ranges from Ilerdian to basal Cuisian (~55-52 Ma) corresponding to upper SBZ7 to basal SBZ10 larger foraminifera zones. Age of the mammal fossil horizons in the lower part of the succession appears to be Sparnacian (~55-54 Ma).

Keywords: Dinoflagellate cysts, Palaeocene-early Eocene, Vastan lignite, early Eocene mammals