

Fossil molars of *Pachyportax* (Boselaphini, Bovidae) from Middle Siwalik Subgroup of Pakistan

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ABSTRACT

Pachyportax is a well-known representative of the Late Miocene bovids in the Siwalik Group. The new fossils were collected from different localities of the Middle Siwalik of Pakistan of Late Miocene-Early Pliocene ages (7.0-3.5 Ma). The fossiliferous sites are situated in district Jhelum near well-known villages the Hasnot and the Padhri. The newly recovered fossils comprise isolated molars and premolars. The studied dental material was identified based on the morphological and metrical characters and assigned to *Pachyportax latidens*.

Key Words: Palaeontology, Taxonomy, Siwalik, Mammalia, Dhok Pathan Formation.

INTRODUCTION

The Siwaliks are Neogene deposits found in Pakistan, India, Nepal and Bhutan. It is divided into three subgroups namely Lower Siwaliks, Middle Siwaliks and Upper Siwaliks. The Middle Siwalik fauna is richly recorded formation known as Dhok Pathan Formation of Pakistani Siwaliks. The fossiliferous localities of the Siwalik Group are known since the 17th century (Lydekker, 1876, 1878, 1884; Pilgrim, 1926, 1937, 1939; Hooijer, 1950; Akhtar, 1992; Khan *et al.*, 2009, 2012, 2014, 2015; Babar *et al.*, 2016). *Pachyportax latidens* was reported for the very first time in Middle Siwaliks at Late Miocene ages. The said species has very short stratigraphic range from Late Miocene to Early Pliocene of the Middle Siwaliks of Pakistan. The species disappeared in Upper Siwaliks during Pleistocene ages, so it has a very short interval geologically (Pilgrim, 1939; Gentry, 1999 Bibi, 2007; Khan *et al.*, 2009).

The newly recovered material from Dhok Pathan Formation of the Siwaliks confirms the existence of the *Pachyportax latidens*, a large sized bovid species, in the Siwaliks. The isolated molars have been recovered from two villages (Hasnot and Padhri) of district Jhelum, Pakistan (Fig.1). The stratigraphy and biochronology of the Potwar plateau of Pakistan was provided by Barry *et al.* (2002). "The material from the Late Miocene of the

Siwaliks can be assigned to *Pachyportax latidens*, which is common at the Late Miocene-Early Pliocene sites in the subcontinent Siwaliks.

METHODOLOGY

The newly discovered material has been deposited in Fossil Display and Research Centre, Department of Zoology, University of the Punjab, Lahore, Pakistan. The aim of the article is to describe additional material of the Late Miocene large sized Siwalik bovid and it will be an addition to the existing knowledge about these genera.

SYSTEMATIC PALAEOLOGY

"Family Bovidae Gray, 1821"

"Tribe Boselaphini Simpson, 1945"

"Genus *Pachyportax* Pilgrim, 1937"

"***Pachyportax latidens* (Lydekker) Pilgrim, 1937"**

New material: "PUPC 16/17, an isolated highly damaged upper premolar; PUPC 16/13, an isolated partially broken left M2; PUPC 16/15, an isolated left M2; PUPC 16/14, an isolated partial left M3."

DESCRIPTION

PUPC 16/17 is a damaged upper premolar (Fig., 2). The protocone is present whereas the paracone is highly damaged. The metacone and hypocone are missing. The molars are quadrate (Fig., 2). The protocone is extended lingually. The

'preprotocrista' is smaller than the 'postprotocrista'. The dentinal eyelet is present occlusally in the center of the molars. The enamel is rugose. The mesostyle is more developed than the parastyle and metastyle. "The lower third molar is partially preserved (Fig. 2). The major conids: protoconid,

metaconid, hypoconid and entoconid are well developed. The ectostylid is transversally extended. The prefossettid and postfossettid are deep."

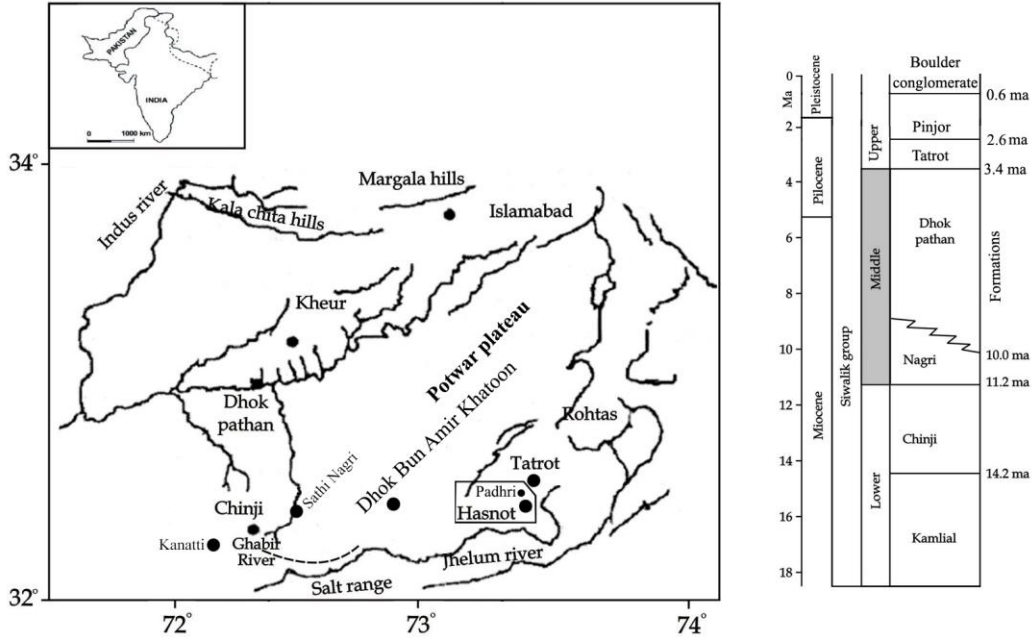


Fig., 1: "Map of Potwar Plateau showing studied localities (encircled) in northern Pakistan."

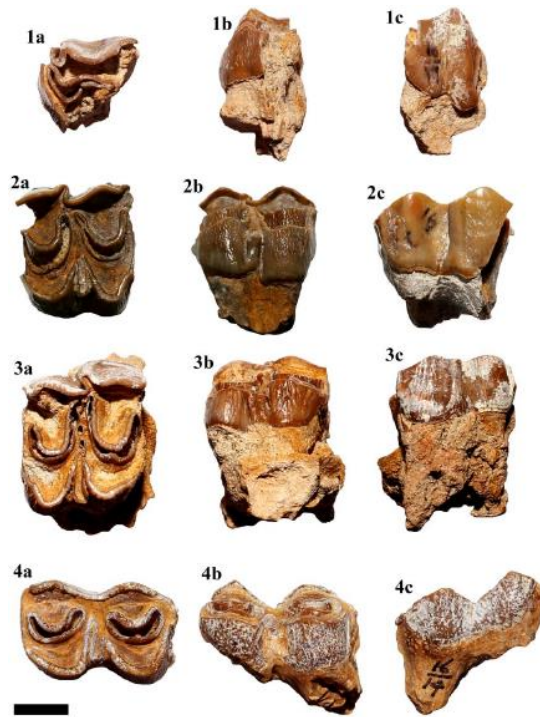


Fig., 2: *Pachyportax latidens*: 1. PUPC 16/17, P; 2. PUPC 16/13, M2; 3. PUPC 16/15, M2; 4. PUPC 16/14, m3. a = occlusal, b = lingual, c = buccal. Scale bar 10mm.

Table I: Comparative measurements of the cheek teeth of *Pachyportax latidens* in millimeters. *The studied specimens. Referred data are taken from Akhtar (1992), Khan *et al.* (2008, 2009).

| Inventory No. | Nature | Length | Width | W/L |
|----------------|--------|----------|----------|------|
| PUPC 16/17* | P | ca.20.14 | ca.18.08 | 0.89 |
| PUPC 16/16* | M | ca.17.87 | ca.23.83 | 1.33 |
| PUPC 16/15* | M2 | 22.30 | 23.41 | 1.04 |
| PUPC 16/13* | M2 | 21.45 | 25.0 | 1.16 |
| PUPC 16/14* | m3 | 28.08 | 17.05 | 0.60 |
| PUPC 96/40 | M2 | 19.4 | 18.4 | 0.94 |
| PUPC 96/3 | M2 | 27.0 | 22.0 | 0.81 |
| PUPC 86/36 | M2 | 30.0 | 23.0 | 0.76 |
| PC-GGCUF11/167 | m3 | 37.2 | 17.4 | 0.46 |
| PUPC 86/7 | m3 | 33.0 | 14.0 | 0.42 |

COMPARISON AND DISCUSSION

The most prominent features of the upper molars are large sized and quadrate shape with transversely extended median basal pillars, relatively heavy styles and strong ribs. The systematic study of the specimens reflects all the morphometrical features of the genus *Pachyportax* and the species *P. latidens* (Khan *et al.*, 2008 a,b 2009). Genus *Selenoportax* has constricted crown neck as compared to *Pachyportax*. It is already noted that *Pachyportax* adapted habitats like other living boselaphine, *Boselaphus tragocamelus* (Scott, 1985; Khan *et al.*, 2009). The development of folds and strong pillars with rounded and wearing cusps suited for open habitat and diets available in these habitats. In diet, much tougher items are indicated by more complex and advanced morphological characters of teeth in the group (Bibi & Gülec, 2008). In fact, the Hasnot and Padhri regions indicate patchy drier habitats with dense forests and wet lands.

CONCLUSIONS

The new molars of *Pachyportax latidens* recovered from Hasnot and Padhri Villages of District Jhelum of Middle Siwalik Subgroup of Pakistan. The recovery of molars updates the palaeontological record of *Pachyportax latidens* and confirms the existence of species in the Siwalik Late Miocene – Early Pliocene.

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