

## AN EVIDENCE OF *CERVUS PUNJABIENSIS* FROM THE LOWER SIWALIKS OF THE PUNJAB, PAKISTAN\*

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**Abstract:** An isolated tooth of *Cervus punjabiensis* has been collected from the Lower Siwaliks. The species is already known from the Middle Siwaliks and described for the first time from the Lower Siwaliks at Dhok Bun Ameer Khatoon (32° 47' 26.4" N, 72° 55' 35.7" E), Chakwal district, Punjab Pakistan. It supports the idea that fossil cervids are distributed from the Lower to the Upper Siwaliks.

**Keywords:** Isolated tooth, *Cervus punjabiensis*, Siwaliks.

### INTRODUCTION

The cervids appeared in Oligocene with small size and lack of antlers. Early small cervids, e.g., *Eumeryx* and *Iberomeryx* appeared in the Middle Oligocene of central Asia from where they dispersed to Europe and North America, most probably in the Early Miocene (Savage, 1983). The first appearance of cervids in South America and Africa has been reported from the Pleistocene. Several species of the family cervidae have been described from the Upper Siwalik rocks while Pilgrim mentioned the horizon as Middle Siwaliks. Ghaffar (2005) has mentioned that *Cervus sivalensis*, *C. punjabiensis* and *C. rewati* are found in Middle Siwaliks. In the Siwaliks there are no deer in pre-hipparion levels but recently a specimen of *C. sivalensis* was collected from the Chinji formation and the Middle Siwaliks (Ghaffar *et al.*, 2006). The Siwalik species of the family cervidae belong to one genus *Cervus* having five species *C. simplicidense*, *C. triplidense*, *C. rewati*, *C. punjabiensis* and *C. sivalensis* (Arif *et al.*, 1991). Brown (1926) introduced the name *C. punjabiensis*. Later on, *C.*

*punjabiensis* was described by Colbert (1935). Brown (1926) stated that accessory inner column is absent and the enamel surface is perfectly smooth. In the type specimen the anterior half of the tooth is wider than the posterior one. But this feature is not mentioned by Brown (1926) and he stated that antlers in these are long and circular in outline, with smooth surface and faint longitudinal grooves. In dentition there is no accessory inner column and the enamel surface is perfectly smooth. In *C. punjabiensis* teeth are large in size like *C. sivalensis* but without median basal pillars and the enamel surface is perfectly smooth while the diagnostic features of *C. rewati* are the small size of the teeth, the presence of accessory columns, and pronounced anterior folds on the molars which are absent in *C. sivalensis*.

#### **Abbreviations**

PUPC, Punjab University Palaeontological Collection; AMNH, American Museum of Natural History; M, molar; L, maximum preserved length; W, maximum preserved width; H, maximum preserved height; W/L x 100, width length ratio.

#### **Systematic palaeontology**

Order: ARTIODACTYLA Owen, 1848  
 Suborder: RUMINANTIA Scopoli, 1777  
 Superfamily: CERVOIDEA Simpson, 1931a  
 Family: CERVIDAE (Goldfuss, 1820) Gray, 1821  
 Subfamily: CERVINAE [Baird, 1857](#)  
 Tribe: CERVINI [Weber, 1928](#)  
 Genus: CERVUS Linnaeus, 1758

#### **Type species**

*Cervus elaphus* Linnaeus.

#### **Included species**

*Cervus axis*, *C. ischnoceros*, *C. philisi*, *C. albirostris*, *C. Colberti*, *C. perolensis*, *C. elaphoid*, *C. alfredi*, *C. duvuucelii*, *C. elaphus*, *C. eldii*, *C. mariannus*, *C. nippon*, *C. schomburgxi*, *C. timorensis*, *C.*

*unicolor*, *C. latidens*, *C. simplicidens*, *C. triplidens*, *C. sivalensis*, *C. Punjabiensis* and *C. rewati*.

***Generic diagnosis***

The cheek teeth evolved a great crown height, fusion of the outer cristae, and selenodont as well as intensified and higher. The styles are stronger than the stylids and the first molar is brachydont. The goat fold and neocrista are either in a vestigial form or absent. The upper premolars show molarization by becoming more rounded and retaining only a weak incision on the lingual wall (Gentry *et al.*, 1999).

***Distribution***

Asia, North America and Europe.

***CERVUS PUNJABIENSIS* Brown, 1926**

***Holotype***

AMNH 1911, an incomplete skull with antlers.

***Type locality***

Chandigarh, Indian Punjab, India.

***Stratigraphic range***

Middle Siwaliks.

***Diagnosis***

Teeth hypsodont, with open crests and enfolded enamel, lacking accessory inner columns; surface smooth (Colbert, 1935).

***Specimen examined***

PUPC 08/104, an isolated upper left second molar.

***Locality***

Dhok Bun Ameer Khatoon, Chakwal district, Punjab, Pakistan.

### *DESCRIPTION*

#### *Upper second molar (M<sup>2</sup>)*

The specimen under study PUPC 08/104 (Fig. 1) is an isolated left second upper molar. The specimen is badly damaged and having numerous cracks on enamel due to weathering. It is in the late stage of wear. A thick layer of cement is also present on the outer sides of the specimen with open crests and enfolded enamel. Median basal pillar is absent as the basic character of the species under study. The tooth surface is smooth. The enamel is moderately thick and its thickness is 1.5 mm.

The tooth is broad crowned (Table I). Hypocone and paracone are moderately preserved while protocone on the lingual side and metacone on the buccal are damaged with no enamel. It is evident from the remaining part of protocone that it is forwardly directed as compared to the hypocone. The anterior cones are broad and more prominent than that of posterior ones. The buccal cones are vertically higher than that of lingual cones.



**Figure 1:** *Cervus punjabiensis*, PUPC 08/104, upper left second molar A- buccal view, B- occlusal view, C- lingual view (Scale bar 10 mm).

**Table I: Comparative measurements (mm) of an isolated left M<sup>2</sup> (PUPC 08/104) referred to *C. punjabiensis* Brown, 1926.**

	AMNH 19911 (Colbert, 1935)	PUPC 08/104
	M <sup>2</sup>	M <sup>2</sup>
L	24	23
W	22	24
W/L	95.6	104

*Abbreviations used:* L, maximum preserved length; W, maximum preserved width; W/L, width-length.

## DISCUSSION

In the type specimen, Brown (1926) described the M<sup>1</sup> of right side and antlers. In the material under study, there is an isolated upper second left molar and exhibit the characters like type specimen as these lack accessory inner column and the enamel surface is smooth. In comparative dental measurements, Brown (1926) did not mention antero-posterior and transverse values of lower teeth but when we compare the specimen under study with AMNH 19911, antero-posterior length, transverse width and W/L ratio resembles with the holotype. The slight difference in the measurements is due to the individual variations. On the basis of above described features, teeth size, contour, enamel smoothness and structure of crown, the specimen under study resembles with the identified information and holotype. So specimen under study is being referred to genus *Cervus* and species *C. punjabiensis*.

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