A New Addition to the Siwalik Carnivora from the Tertiary Rocks of Pakistan

Abdul Ghaffar and Muhammad Akhtar
Department of Zoology, University of the Punjab, Quaid-e-Azam Campus, Lahore 54590, Pakistan

Abstract: A well preserved first right lower molar from the Tertiary rocks of Pakistan is described from Padhri (Middle Siwaliks) District Jhelum, the Punjab province, Pakistan. It essentially differs from the known material of the genus *Sivapathera* both in morphology and size. The name *Sivapathera padhriensis* is being proposed to this new addition.

Key words: Tertiary, *Sivapathera*, morphology

INTRODUCTION

Carnivores although fragmentary in nature, are the most interesting of the Siwalik mammals. They represent a great variety of genera and species. Order Carnivora includes three suborders as (I) Creodonta, (ii) Fissipedia, (iii) Pinnipedia Iliger, 1811. But most recently Wilson and Reeder[1] have paid a special attention to order Carnivora and their studies on family level indicate that Creodonta is the sister group to order Carnivora. They organized the order Carnivora into two suborders as Feliformia including felids, herpestids, hyaenids, viverrids and Caniformia including canids, ursids, mustelids, odobenids, otariids, Phocids and procyonids. Wilson and Reeder[1] emerged the suborder Pinnipedia in California, placing them in a separate Order would make the Carnivora paraphyletic[2,3]. Simpson[4] divided family felidae into five subfamilies, out of these five, the four subfamilies are extinct, while only family felinae consists of three extinct and three living genera. Wilson and Reeder[1] divided family felidae into three subfamilies. The genus *Panthera* and *Acinonyx* of Simpson[4] are upgraded as subfamilies, Pantherinae and Acinonychinae by Wilson and Reeder[1]. Similarly the subgenera *Panthera* (*neofelis*) and *Panthera* (*uncia*) are upgraded at generic level, as *Panthera*, *uncia* and *neofelis*. There are few genera of subfamily Felinae. Comparative and anatomical studies of the specimen under study have shown that this belongs to genus *Sivapathera*. Two species of the same genus are already described naming *Sivapathera brachygnathus*[5] and *Sivapathera potens*[6] but *Sivapathera padhriensis* (Sp. Nov.) is being described for the first time.

Abbreviations
Br.Mus: British museum of Natural History, London

P.U.P.C: Punjab University Paleontological collection, stored in the Department of Zoology, Lahore (Pakistan)
G.S.I.: Geological survey of India, Calcutta
L.: Maximum preserved anteroposterior crown length of tooth
W.: Maximum preserved crown width of tooth
Cf.: Crown shape index (W/L x 100)
M1: First lower right molar
mm: Millimeter

Systematics
Class: Mammalia, Linnaeus
Subclass: Theria, Haswell
Infraclass: Eutheria, Gill
Superorder: Ferae, Linnaeus
Order: Carnivora, Bowdich
Suborder: Feliformia, Wilson and Reeder
Superfamily: Canoidea, Simpson
Family: Felidae, Gray
Subfamily: Felinae, Trouessart
Genus: *Sivapathera*, Kretzoi
Species: *Sivapathera padhriensis*, (Fig. 1)

Type: A right first lower molar (P.U.P.C. No. 2001/12).
Locality: Padhri, Jhelum district, the Punjab province, Pakistan.
Horizon: Middle Siwaliks
Hypodigm: Type only

Diagnosis: *Sivapathera padhriensis* is of large size with well-defined and deep masseteric fossa, M,
Table 1. Comparative dental measurements (mm) of \( M_1 \)
(P.U.P.C NO.2001/12) of *Swapanthera padhiensis* (sp.nov.) to
the other species of the genus *Swapanthera*.

<table>
<thead>
<tr>
<th></th>
<th><em>Swapanthera</em></th>
<th><em>Swapanthera</em></th>
<th><em>Swapanthera</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>padhiensis</td>
<td>pardinus</td>
<td>brachygathi</td>
</tr>
<tr>
<td>P.U.P.C NO</td>
<td>2001/12</td>
<td>C.S.I No. 222</td>
<td>Br. Mus. No. 15573</td>
</tr>
<tr>
<td>L</td>
<td>32.70</td>
<td>19.50</td>
<td>22.50</td>
</tr>
<tr>
<td>W</td>
<td>14.40</td>
<td>9.50</td>
<td>11.50</td>
</tr>
<tr>
<td>C</td>
<td>44.36</td>
<td>48.71</td>
<td>51.11</td>
</tr>
</tbody>
</table>

lower molar of right mandibular ramus. The roots of the
tooth are also well preserved. The specimen is in an
excellent state of preservation and at late stage of wear. It
is also narrow crowned tooth (Table 1). The principal
conids are excellently preserved. Anteroposterior diameter
of protoconid is greater than that of paraconid, while the
transverse diameter of paraconid is greater than that of
protoconid. The tooth is broad to the base while becomes
sharp and narrow to the summit of crown. The buccal side
of the conids show more wear than that of lingual side.
The posterior cusp is rudimentary and sharp. It is also
broad to the base and narrow anteriorly. The root of
paraconid is more prominent and broad than that of
protoconid root.

**DISCUSSION**

Lydekker\(^1\) described three mandibular rami from the
Siwaliks, he gave the name one of them as *Felis non det*;
allied to *Felis pardus* and other two as *Felis (Cynaelurus)*
brachygathi. Mathew\(^2\) retained these names and
stated that *Cynaelurus pleistocaenicus* was a synonym of
*Felis brachygathi* Kretzoi, later on, considering the
two right ramii as generically distinct from one another
and also from *Felis* proposed the name *Swapanthera*
lydekkeri. Pilgrim's arrangement was retained by
Colbert\(^3\). Later on, Simpson\(^7\) rightly pointed out that
*Swapanthera* was the valid name, the other two being
invalid. Comparative dental measurements show that the
specimen under study has much higher values of
anteroposterior and transverse diameter than that of other
species of the same genus, indicating that, this is a new
addition to Siwalik carnivora and has not been described
by any former worker, working on Siwalik carnivora. So it
requires the best need to erect a new species and the
name *Swapanthera padhiensis* is being proposed after
the name of the locality.

**REFERENCES**

of the world. A Taxonomic and geographic reference.
Second edition Smithsonian institutions press,


