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IDENTIFICATION OF DORSAL GUARD HAIRS SURFACE STRUCTURE OF INDIAN CHEVROTAIN *MOSCHIOLA INDICA* GRAY, 1852 (TRAGULIDAE: ARTIODACTYLA: MAMMALIA)

M. Kamalakannan[1], J.K. De[1] and C.K. Manna[2]

[1]Zoological Survey of India, M- Block, New Alipore, Kolkata-700053, India
[2]Department of Zoology, University of Kalyani, Nadia, Kalyani- 741235, India

E-mail: kamalakannanm1@gmail.com

ABSTRACT

Tricho-taxonomy is the study of hairs. Tricho-taxonomic studies have been carried out by many workers on different orders of class Mammalia. But meagre information is available on tricho-taxonomic studies of species under Artiodactyla of India. The physical characters, surface structure and medulla of guard hair of *Moschiola indica* were examined to have basic surface architecture for taxonomic identification. This study may help the different enforcement agencies engaged for implementation of Indian Wildlife (Protection) Act, 1972.

.**Key words :** *Moschiola indica*, tricho-taxonomy, physical characters, surface structure and medulla.

INTRODUCTION

Presence of hairs is the most characteristic feature of mammals (Prater, 1971). Detailed knowledge on the hair structure is required to identify the species, where morpho-taxonomy cannot give the fruitful result. Physical characters, surface structure and medulla of guard hair may help in species identification (Chakraborty &De, 2010; Sahajpal *et al.*, 2010, Kamalakannan &De, 2013, etc.). Now-a-days, the tricho-taxonomy is an important tool used in the field of forensic, criminology, food-habit analysis, etc.

The Zoological Survey of India is a premier organisation in the field of animal taxonomy in India and it has already invented method of tricho-taxonomy(De, 1993; Venkataraman *et al.*, 1994; Chakraborty & De, 1995, 2001, 2002, 2005 & 2010;De *et al.*, 1998; Bahuguna, 2008; Sarkar, 2011, Kamalakannan & De, 2013, etc.) for identification of mammalian species from small part of skin, brushes, bags, wallets, etc. Tricho-taxonomical works on different mammals orders; Carnivora (Chakraborty & De, 2010),Primates(De, 1993; Sarkar *et al.*, 2011),Rodentia (Bahuguna, 2008) have been done and few works on hairs of Artiodactyls except the studies of De & Chakraborty (2013), Joshi *etal.*(2012)and Keogh (1983) are recorded in India. But scanty information is available on the hair structure of *Moschiola indica*.

Indian Chevrotain or Mouse deer (*Moschiola indica* Gray 1852), is an Asia's smallest ungulate, distributed in India and Nepal (Raman, 2004; Baral *et al.*, 2009). It lives in tropical deciduous and moist evergreen and semi-evergreen forests of the Peninsular India(Raman, 2004). This species was earlier included under the name of *Tragulus meminna* but based on

systematic evidence the name is restricted to Sri Lankan Spotted Chevrotainhence, *Moschiola indica* was segregated by Groves and Meijaard (2005), as a species of India and Nepal. Its population trend is decreasing now due to two major threats *i.e.,* habitat destruction and illegal poaching by local communities for meat selling in local markets (Madusudan & Karanth, 2002; Raman, 2004). *Moschiola indica* is the only species under family Tragulidae in India and it listed in Part I of Schedule I of the Indian Wildlife (Protection) Act, 1972. The main objective of the present study is to provide a detailed account of hair structure of *Moschiola indica* for identification.

MATERIAL AND METHODS

About 10- 15 tufts of dorsal guard hair were collected from the mid-dorsal region of three dry specimens of *Moschiola indica* present in the National Zoological Collection, Mammal & Osteology Section of the Zoological Survey of India, Kolkata, India. The samples were washed thoroughly in Carbon tetra chloride after by Chakraborty *et al.* (1996) to remove the dirt of exogenous materials. Physical characters of hairs such as profile, colour, bands were recorded and diameter and total length were measured by dial calliper. Microscopic characters such as scale position, scale pattern, scale margin and scale margin distance of hair were studied with help of the digital camera fitted on optical light microscope (Olympus BX41). The medullary configuration and composition, structure and margins of the medulla were also noted. Nomenclature of different parameters was followed by Bruner & Coman (1974); Moore*et al.* (1974);Teerink (1991) and Chakrabarty*et al.*(1996) and nomenclature of colour was after by Ridgway (1886).

RESULTS AND DISCUSSION

Physical characters

The profile of hair was straight with an elongated sharp tip and possesses 2 bands; colour is claret brown at the tip and white or paler at the base. The total length and diameter of dorsal guard hair was observed as 13-21mm (15.73±1.22) and 50-70µ (68±4.56), respectively.

Microscopic characters

Position of scale is transversal; scale pattern- regular wave; scale margin- smooth; scale margin distance- distant (Figure1), the medullary configuration is unbroken lattice, it filled with entire width of hair and cortex is hardly distinguished, structure of medulla is multicellular and medulla margin is scalloped (Figure 2).

Figure-1: Microscopic Surface structure of dorsal guard hair of *Moschiola indica*

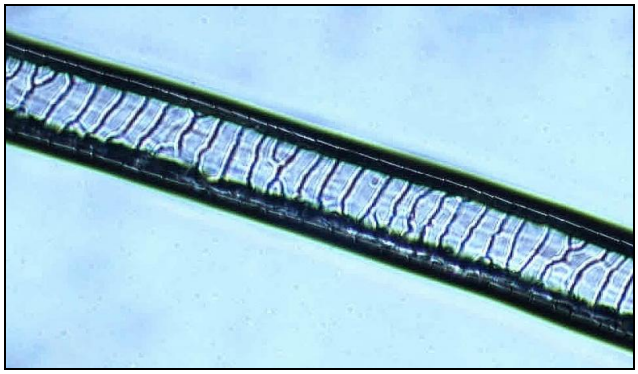
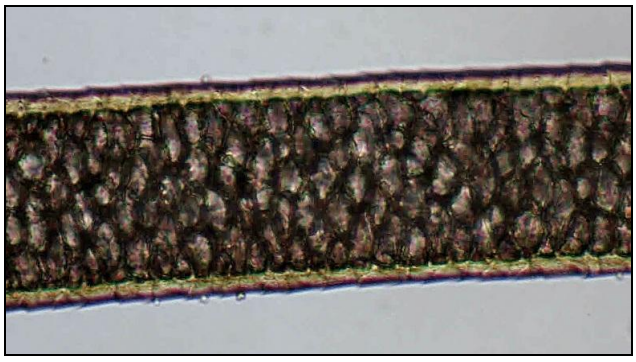


Figure-2: Microscopic Medulla structure of dorsal guard hair of *Moschiola indica*



Findings of the dorsal guard hair characters of *Moschiola indica* is summarised as follows:

A) Physical characters:

Profile: Straight
Colour: Tip- Claret brown
Base- White or paler
No. of Bands: 2
Length (mm): 13-21 (15.73±1.22)
Diameter (µ): 50-70 (68±4.56)

B) Surface Structure (Figure 1)
Scale position: Transversal
Scale pattern: Regular wave
Scale margin: Smooth
Scale margin distance: Distant

C) Medulla (Figure 2)
Medullary Configuration: Unbroken Lattice
Medulla Composition: Multicellular in rows
Medulla margins: Scalloped

Joshi *et al.* (2012) reported a comparative trichology of Chital (*Axis axis),* Sambar (*Rusa unicolor),* Barking deer (*Muntiacus muntjak)* and Mouse deer *(Moschiola indica)* in India but, physical structure and surface structure of these species particularly *Moschiola indica* was not done and also no other hair characteristic features on this species are available in the literatures. Therefore, an attempt has been made to have detail structure of dorsal guard hair of this species.

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