BRIEF NOTE

Postnatal Development and Histology of the Infraorbital Glands in the Japanese Serow, *Capricornis crispus*

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It is well known that Japanese serows have infraorbital glands, *Gill. sinus infraorbitalis*, which seem to play an important part in scent communication [1]. The gross morphology of the organs in the Japanese serow was briefly reviewed by Pocock [4], but little information is available on the histology of the infraorbital glands in *Caprinae* [5]. The present study is to describe the postnatal development and the histoplanimetry of these glands in the Japanese serow.

Infraorbital glands were obtained from 207 males and 202 females captured in Gifu Prefecture during December through March, 1979 to 1981. The organs were weighed and then fixed in 10% formalin. Tissue blocks from the middle of the organ were embedded in paraffin, sectioned at about 8 μm and stained with hematoxylin-eosin and PAS reaction. The serows’ age was assessed by the eruption of teeth and wear of incisors; 0, 1, over 2 (Ⅱ-I, Ⅱ, Ⅲ, Ⅳ and Ⅴ) years in the order of age [2, 7].

The infraorbital gland formed swelling in the inferio-cranial portion of each eye (Fig. 1). Each gland had a deep, hairy sinus in which secretion was accumulated (Fig. 2). The parenchyma of the organ was divided into two zones, the narrow whitish inner one and the wide brownish outer one, consisting of sebaceous and sudoriferous glands, respectively. The sudoriferous secretory cells were cuboidal to columnar in shape, depending on their activity. A layer of myoepithelial cells was located between the secretory cells and the basement membrane. Cytoplasmic blebs often protruded from the apical surfaces of secretory cells into the lumen of the tubule, and the secretion was apocrine in type. Several lipofuscin-like granules were usually observed under the nuclei. The granules in old serows were larger than in young serows. The highly branched alveoli of sebaceous glands were superimposed on the zone of the sudoriferous glands. Two types of sebaceous glands were noted; type I was small and the mode of secretion was holocrine (Fig. 3); type II was large and hepatoid-like, stained more intensely with eosin (Fig. 4), similar to “hepatoid Drüsen” in *Gazella dorcas* [5].

There were two important findings in this study. The first was the increasing weight of the infraorbital gland with age. The body weight of serows continued to rise until they were about 2 years old and became constant in serows over 2 years of age, while the weight of the glands rose
continuously after 2 years of age (Fig. 5). The weight of the sudoriferous portion, estimated histoplanimetrically, also increased with age; the weight of the organ was dependent upon the weight of the sudoriferous glands. Mykytowycz (1965) showed in Australian rabbits that the chin glands were larger in dominant old males than in subordinate ones [3]. In the serow, there also may be a correlation between the weight of infraorbital glands and social status.

The second major finding was the sexual difference. The organ of males had a small
amount of type I sebaceous glands, while the glands in females were occupied exclusively by a large amount of type II hepatoid-like glands. The estimated weight of the sebaceous portion in males was constant at any age, whereas that in females increased until sexual maturity (Fig. 6). There is general agreement that androgen increases in size and the functional capacity of the sebaceous glands in all species [6], but the sebaceous glands in female serows seem to be affected through hormonal mechanisms different from androgen. Scent from the secretion of type II sebaceous glands may have a role in sexual attraction between serows.

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REFERENCES


EXPLANATION OF FIGURES

Fig. 1. Infraorbital gland of an old scrow (facial skin removed).
Fig. 2. Transverse sections of the gland. Note the wide inner zone of the female gland. Above: Males' in order of age. Below: Females' in order of age.
Fig. 3. Type 1 sebaceous gland in an adult male. The glands are associated with hair follicles.
Fig. 4. Type II sebaceous gland in an adult female. This type is large, highly branched alveolar gland with hepatoid appearance. Hematoxylin-eosin. ×60.

Profiles of coiled sudoriferous glands are also seen on the lower right-hand side of the figure. Hematoxylin-eosin. ×60.

要 約

ニホンカモシカ眼窩下洞腺の生後分化と組織学的構造（葉報）：小寺修平・鈴木義孝・杉村 誠（岐阜大学農学部家畜解剖学講座）——岐阜県下で捕獲されたニホンカモシカ（雄 202頭、雌 207頭）眼窩下洞腺の生後分化と組織構造について検討した。この放養階は眼窩前下方の縁骨上に位置し、組織学的には内層の腺細胞帯と外層の汗腺帯から成るが、前者の腺構成には性差がみられ、雌では多量のヘパトオイド型細胞帯を有していた。眼窩下洞腺の重量は年齢とともに増加し、その本態は汗腺重量の増加に依存していた。