HISTOLOGICAL STUDIES ON THE CAPSULE OF TESTES IN LARGE WHITE YORKSHIRE PIG (*SUS SCROFA*)

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ABSTRACT

A study conducted on the testes of apparently healthy 12 Large White Yorkshire pigs between the age of seven months to around one and half year. The testes were procured from the apparently healthy animals from the local private abattoir house, in Bikaner. Small pieces of tissues (4-6 mm thickness) were collected from the 12 pairs of testes (12 right and 12 left) for the histological study. The tunica albuginea was made up of thick connective tissue which consisted of collagen, elastic and reticular fibres. Internally to the tunica albuginea, tunica vasculosa was prominent and contained numerous blood vessels located in the deeper portion of the capsule. The testicular capsule had smooth muscle fibres in the present study.

Key words: Large White Yorkshire, pig, testes, capsule, tunica albuginea

Introduction

As per 19th Livestock census, 2012, India's pig population was 10.294 million which amounts to about 2% of the country's entire livestock. Pigs are even-toed ungulate, belong to genus *Sus* of family Suidae. The testes are the most essential and primary organs of the male reproductive system. The testis is bipartite glandular organ which contain both exocrine and endocrine compartments. Its exocrine function is to produce male germ cells and its endocrine role is mainly directed to produce male sex hormone (Borysenko and Beringer, 1988). This sphere always attracts the researchers for adding new information by their research which results to enrich and update the knowledge.

Materials and Methods

After the collection, small pieces of tissues (4-6 mm thickness) were collected from the 12 pairs of testes for the histological study. Tissues were immediately fixed in 10% formal saline for 48 hrs. in Bouin's fluid for 12 hrs. and in Zenker's

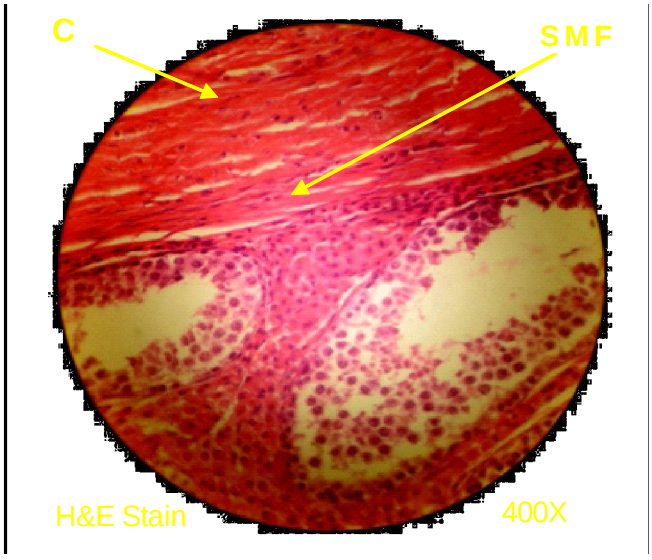

Fig. 1: Cross section of testis showing C-capsule and SMF- smooth muscle fibres

Fig. 2: Cross section of testis showing TA-Tunica albuginea, TV-Tunica vasculosa and BV- Blood vessels

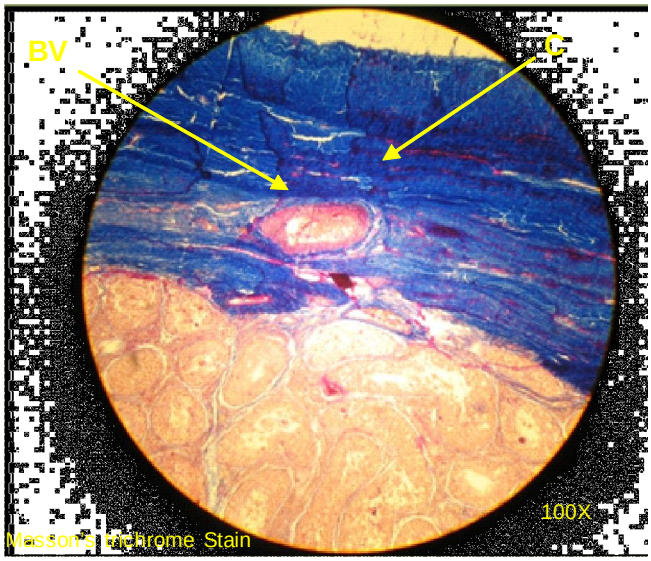

Fig. 3: Cross section of testis showing CF-collagen fibres and BV-bood vessels

fluid for 18 hrs. After fixation, the tissues were washed in running tap water for 6-10 hrs (Sikarwar *et al*., 2015). The tissues then were dehydrated in ascending grades of alcohol. After proper dehydration, tissues were embedded in paraffin wax of melting point 58-60ºC. The tissues were sectioned serially at 5 µm thickness. Then the sections were mounted on albuminized slides and were dried. Finally the sections were stained with the routine histological stains to demonstrate different components of the capsule of the testes.

Results and Discussion

The capsule of the testis was composed of two layers which were tunica albuginea and tunica vasculosa (Fig. 2). The tunica albuginea was made up of thick connective tissue which was consisted of collagen (Fig. 3), elastic and reticular fibres. Similar observations were recorded by Kishore (2006) in ram and Mohammed *et al.* (2011) in indigenous goat. Whereas, Yaseen (2009) in goat, Sharma *et al.* (2011) in dog and Singh (2013) in Marwari sheep observed that the tunica albuginea was made up of thick connective tissue which was consisted of collagen and reticular fibres only. However, Kaur *et al.* (2009) mentioned that the tunica albuginea consisted of collagen fibres, a few elastic fibres and myofibroblasts in buffalo. Singh and Bharadwaj (1978) in camel, Tiwari *et al.* (1988) in goat, Uppal *et al.* (2003) in donkey, Gofur *et al.* (2008) in bull, Pathak *et al.* (2013) in mule and donkey and Mahmud *et al.* (2015) in one - humped camel bull, Uda ram and red sokoto buck observed that tunica albugenia mainly consisted of collagen fibres.

Below tunica albuginea, the tunica vasculosa was prominent and contained numerous blood vessels located in the deeper portion of the capsule (Fig. 2). These findings are in total agreement with description of Pathak *et al.* (2013) in mule and donkey. Whereas, Konig and Liebich (2006) mentioned that tunica vasculosa was located near the parenchyma of the testis in domestic animals.

The testicular capsule had smooth muscle fibres (Fig. 1) in the present study that confirmed the findings of Getty (1977) in horse and Singh and Bharadwaj (1978) in camel, Sudhakar and Sharma (1993) in spiti ponies, Mohammed *et al.* (2011) in indigenous goat and Hanumant (2016) in goat. On the contrary, Islam *et al.* (2002) stated that the testicular capsule was free of smooth muscle fibres in black Bengal goat. Uppal *et al* (2003) reported that tunica albuginea was fibro-muscular in the teatis of donkey testis.

The thickness of capsule ranged from 315 to 665 µm with an average thickness of 407.16±33.20 µm in the current study. Yaseen (2009) described that the averaged thickness of capsule was 422.64±22.8 µm in Marwari goat which was more than the thickness of the capsule of the Large White Yorkshire pig in the present study.

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