قسم : التشريح والهستولوجيا .
كلية : الطب البيطرى - جامعة أسيوط.
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الغدة الشفية الانفيه في جلد الجاموس المصرى

عبد الله حفني ، جمال كامل ، عزيزة سليم ، عبد الحكيم الكيلاني

١) شملت هذه الدراسة عشرون حيوانا بالغة العمر وتم صبغ القطاعات بالصبغات الهستولوجية والهستوكيميائية ووجد أن هذه الغدة الأنبوبيه الكيسية المركبة السالية توجد في المنطقة الشفية الأنفية وتفتح على السطح مباشرة.

٢) الخلايا العينية المركزية عبارة عن خلايا مبططة توجد بين الجزء الغدى واللمعة الضيقة للجزء المفرز.

٣) يوجد في الجزء الغدى المفرز لهذه الغدة السالية نوعين من الخلايا خلايا فاتحة وأخرى داكنة.

٤) بطريقة جرموري لانزيم الفوسفاتيز القاعدى امكن تمييز الخلايا البشرية المحيطة بالجزء الغدى.

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THE NASOLABIAL GIANDS OF THE SKIN OF THE EGYPTIAN BUFFALO

(With 12 Figs.)

By
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SUMMARY

The skin speciemens were taken from nasolabial region of 20 healthy mature Egyptian buffaloes. The speciemens were fixed, sectioned and stained with the different histological and histochemical methods. The nasolabial glands of buffaloes are compound tubuloacinar merocrine sweat glands distributed within the nasolabial region. Dark and clear cells were demonstrated in the secretory end-pieces, as well as centroacinar cells were observed between the glandular cells and the lumen of the secretory end-pieces.

INTRODUCTION

Merocrine sweat glands in the domestic animals have been reported by several authors (GOLDSBERRY and CALHOUN, 1959; EL-GAAFARY, 1966 and CALHOUN and STINSON, 1976). They mentioned that these, glands are found in the nasolabial region in cattle, buffaloes and goats. GOLDSBERRY and CALHOUN (1959) in cattle; SMITH and CALHOUN (1964) and FOWLER and CALHOUN (1964) stated that the nasolabial glands of new born and fetal swines are compound tubular glands. On the other hand MACKIE and NISBET (1959) and SAR and CALHOUN (1966) mentioned that these glands are multilobular tubulo-acinar glands in cows and goats, respectively. The present work was carried out to study histological and some histochemical features of the nasolabial glands of the Egyptian buffaloes.

MATERIAL and METHODS

The speciemens of the nasolabial gland were collected from 20 healthy mature Egyptian buffaloes. The speciemens were fixed in Bouin's fluid, Helly's fluid and formol-calcium. Paraffin sections of 8-20 Um thickness as well as thick hand frozen sections at about 200 Um thickness were stained with Harriss, Haematoxylin and eosin stain.

For histochemical studies the following methods were used:

1. Periodic acid schiff technique (PAS) for detection of neutral mucopolysaccharides (McMANUS, 1948).
2. Alcian blue for demonstration of acid mucopolysaccharides (STEEDMANN, 1950).
3. Aqueous solution of 2% toluidin blue was applied on paraffin sections for demonstration of cytoplasmic basophilia (PEARSE, 1968).
4. Sudan black-B stain for demostration of neutreal lipid (LISON and DAGNELIE, 1935).
5. Gomori-calcium Cobalt method for demonstration of alkaline phosphatase enzyme, specimens were immediately fixed in formole calcium for 4 hours at (4°C), frozen sections were incubated for 1/2 - 2 hours at 37°C in a solution of sodium B-glycerophosphate (pH 9.2) (GOMORI, (1952).

6. Gomori's method for detection of acid phosphatase at pH 4.8 (GOMORI, 1952).
7. For succinic dehydrogenase enzyme-sections of fresh frozen tissues were examined by using the N-B-T method (NACHLAS et al. 1957). The control sections were incubated in a solution without substrate.

RESULTS

The nasolabial glands of Egyptian buffaloes are compound tubuloacinar merocrine sweat glands, located in the nasolabial region (Fig. 1 A,B). These glands are formed of namerous lobules. The interlobular connective tissue contains skeletal muscle fibers, myelinated nerve fibers and fat cells. Each lobule is composed of densely packed end-pieces (Fig. 2). The glandular cells consist of dark and clear varieties. The dark cells are tall columnar with darkely staind cytoplasm and large rounded nucleus located near the basement membrane. The clear cells are short pyramidal with lightly stained cytoplasm which contains fine acidophilic granules and rounded nucleus with distinct nucleolus (Fig. 3).

The propartion of these two types of cells is variably from one secretory end-piece to another. Several myoepithelial cells are demonstrated between the secretory epithelium and the thin basal lamina (Fig. 4, 5). The execretory duct system begins within the lumen of the seretory acinus as centroacinar cells, which are flattened with lightly stained nuclei (Fig. 6). These cells are continued through the tubular part of the secretory unit (Fig. 7 A,B). The intercalated ducts are continuous with the centroacinar cells, and are formed of cuboidal cells. Several intercaleted ducts open into larger striated intralobular duct drains several intralobular duct. These ducts are lined by simple columnar epithelium (Fig. 8) at the begining and then changes gradually into two layers; a basal layer of cuboidal cells and a superficial layer of columnar cells. The interlobular ducts lead to a large exceretory duct which is lined at the begining with stratified columnar epithelim (Fig. 9) which changes into stratified squamous epithelium. All these later ducts form a large common excretary duct which is lined by stratified squamous epithelium (Fig. 10) which opens onto the surface of the skin of the nasolabial region.

The histochemical studies reveals that the cytoplasm of the glandular cells contains fine sudanophilic particles (Fig. 11). The duct system was coloured grey to deep blue. The fat cells within the interlobular connective tissue were highly sudanophilic.

The nasolabial gland shows positive reaction for PAS. Strong reactions are demonstrated within the basal lamina of the secretory end-pieces. In this glands no metachromatic material could be observed with toulidin blue and weak reaction with Alcian blue. Weak reaction for alkaline phosphatase is noticed within the glandular cells, while the myoepithelial cells are strongly reacted with this enzyme (Fig. 5).

Strong activity for acid-phosphatase enzyme could be detected within the secretory end-pieces (Fig. 12).

The secretory end-pieces and the myoephithlial cells of this gland show moderate reaction for succinic dehydrogenase, which is strong within the cells of the duct.

DISCUSSION

The present investigation revealed that the planum nasolabial has compound tubuloacinar merocrine sweat glands. Similar results were obtained by MACKIE and NISBET (1959) in cattle; LYNE and HOLLIS (1967) in sheep and SAR and CALHOUN (1966) in goats.

In accordance with CALHOUN and STINSON (1976) in some domestic animals, the present study revealed that the secretory end-pieces are formed of one layer of glandular cells, myoepithelial cells and thin basal lamina surrounding a very narrow lumen. Two types of cells were demonstrated. The first one is formed of tall columnar cells with darkly stained basophilic cytoplasm and large rounded nucleus which locate towards the basmwnt membrane. The second type is formed of short pyramidal cells with lightly stained cytoplasm. The cytaplasm contains fine acidophilic granules and rounded nucleus.

Myoepithelial cells are demonstrated between the secretory epithelium and the basal lamina (MONTAGNA and PARAKKAL, 1974). In this work the duct system of these glands begins as centro - acinar cells in the lumen of the secretory acinus, which are continued through the tubular part of the secretory end-pieces.

Regarding the mechanism of delivering of the secretion of the nasolabial gland, it is suggested that the process of empty of the secretion depends mainly upon capillarity. So as this gland has centro-acinar cells which have this character. BUNTING et al. (1948) and MONTAGNA and PARAKAL (1974) stated that the myoepithelial cells of these glands are less numerous than those of the apocrine sweat gland, therefore its function is less significant. In accordance with the findings of BUNTING et al. (1948) and NASR (1964) in the human, the cytoplasm of the glandular portion of the nasolabial gland of the buffaloes are stippled with fine sudanophilic granules, which were hardly to be seen.

In the present investigation, the intensity of positive reaction for PAS differs from one secretory end-piece to another. The basal lamina was strongly reacted with PAS.

The nasolabial glands gave weak reaction with alcian blue. No metachromatic material could be observed. These glands were similar in character to serous glands.

In agreement with CONROY and CHERYL (1975) in canines and MEYER and NEURAND (1976) in pigs, the myoepithelial cells of merocrine nasolabial glands of the buffaloes gave intense reaction for alkaline phosphatase enzyme, but weakly or moderately reaction within the glandular cells.

PADYKULA (1952) suggested that oxidative succinic dehydrogenase enzyme is present in greatest concentration within a portion of tissue with a high metabolic activity or engaged in absorptive or secretory activities. In the present work the glandular epithelium of the nasolabial glands moderate reaction for this enzyme, otherwise the duct system of these glands showed strong reaction.

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LEGENDS

Fig. (1): Compound tubulo-acinar sweat gland within the nasolabial region (A) and diagramatic representation (B) of the duct system and the secretory lobules:
1- Secretory lobule
2- Intralobular duct
3- Interlobular duct
4- Excretory duct
5- Common excretory duct.
(Forzen Section, Sudan black Stain, X 63)

Fig. (2): A louble of the nasolabial gland to show, secretory end-pieces (1), striated duct (2), interlobular connective tissue (3) and interlobular duct (4) (H & E Stain, X 250).

Fig. (3): Clear (C) and dark (D) cells within a secretory end-piece of the nasolabial gland. (H & E Stain, X 1000).

Fig. (4): Secretory end-piece of the nasolabial glands, notice the myoepothelial cell (M). (H & E Stain, X 1000).

Fig. (5): Myoepithelial cell around the secretory end-piece of the nasolabialgl glands. (Gomori's method for alkaline phosphatase, X 1000).

Fig. (6): Secretory acinus of the nasolabial gland, notice the centroacinar cell (arrow). (H & E Stain, X 1000).

Fig. (7): A) The centroacinar cells are interposed between the glandular cells and the lumen of the secretory end-piece of the nasolabial gland. (H & E Stain, X 400).
B) Diagramatic representation of the secretory end-piece with the centroacinar cells.

Fig. (8): The interlobular duct of the nasolabial gland lined with simple columnar epithelium. (H & E Stain, X 400).

Fig. (9): The large excretory duct ofthe nasolabial gland lined with stratified columnar epithelium. (H & E Stain, X 400).

Fig. (10): Common excretory duct of the nasolabial gland lined with stratified squamous epithelium. (H & E Stain, X 250).

Fig. (11): Sudanophilia in the nasolabial gland notice small lipid particles in the glandular portions, the fat cells (F) in the interlobular connective tissue are highly sudanpohilic. (Forzen cection, Sudan black, X 160).

Fig. (12): The Secretory end-pieces of the nasolabial gland showing strong activity for acid phosphatase enzyme. (Gomori's method for acid phosphatase, X 250).

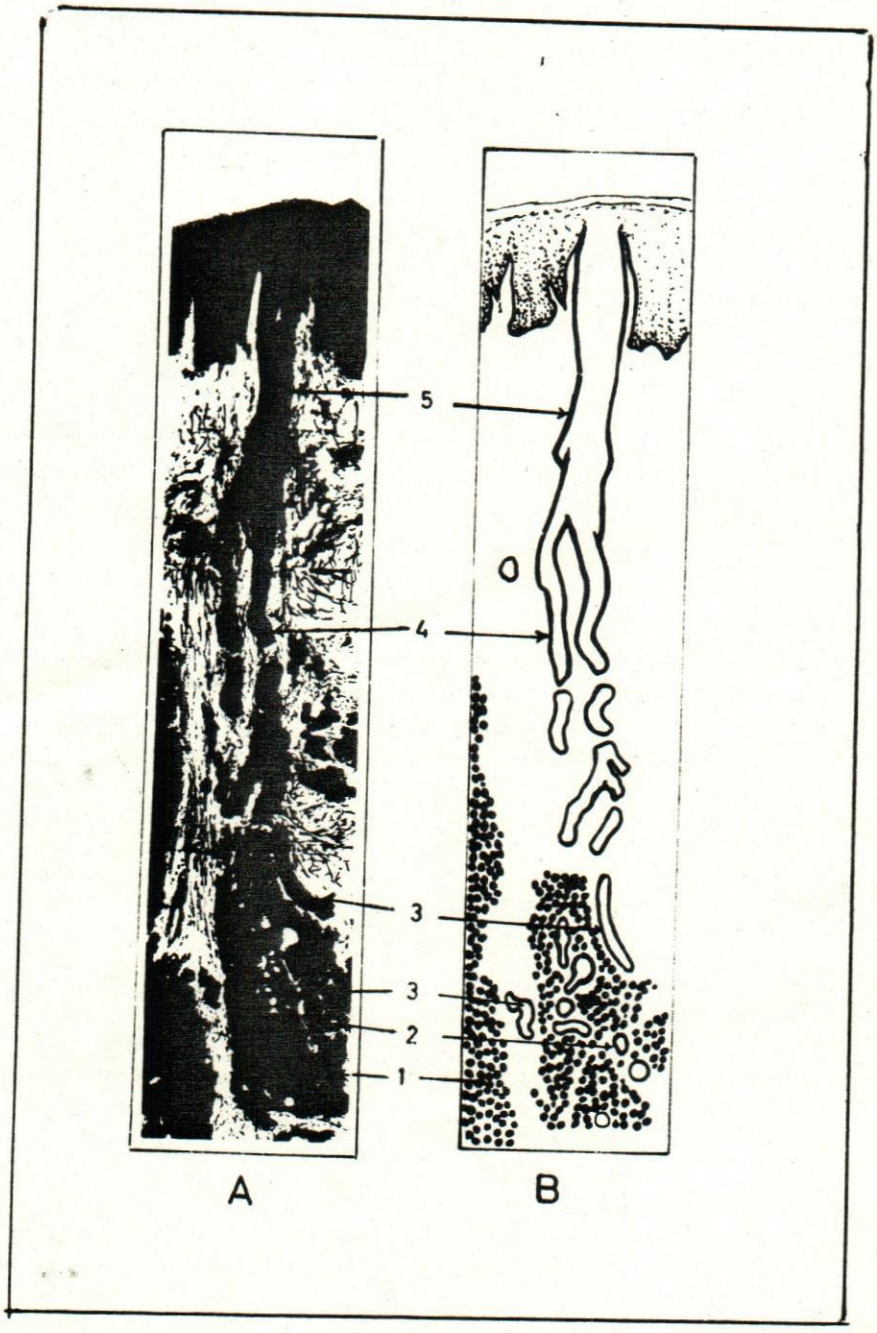
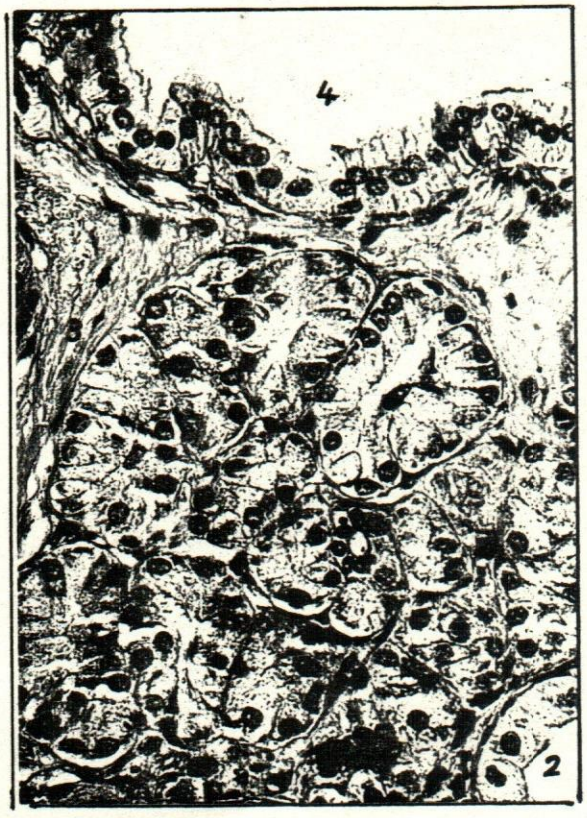


Fig. (1)



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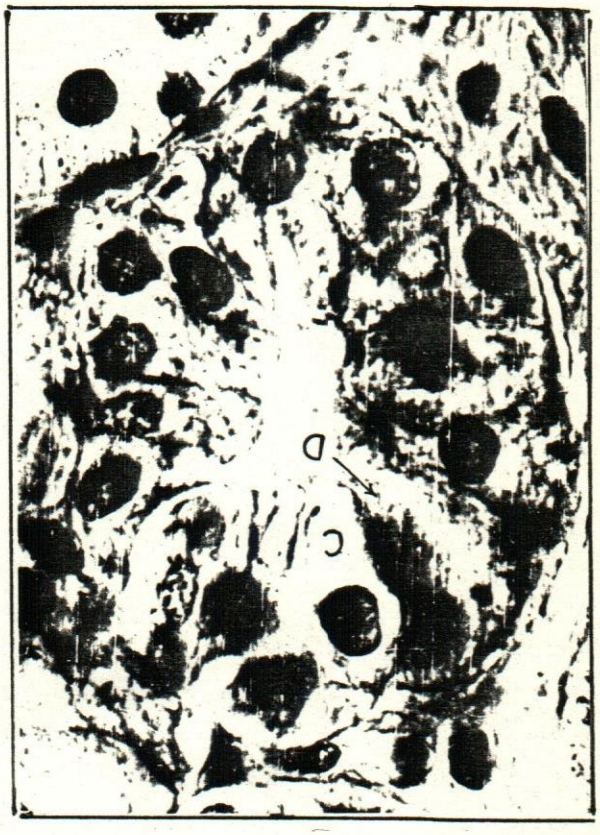

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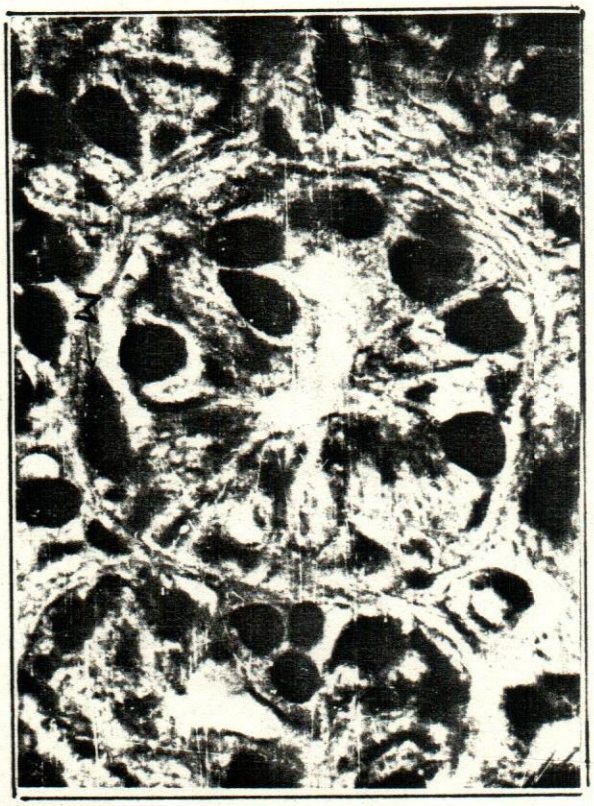

Fig. (4)

Fig. (5)

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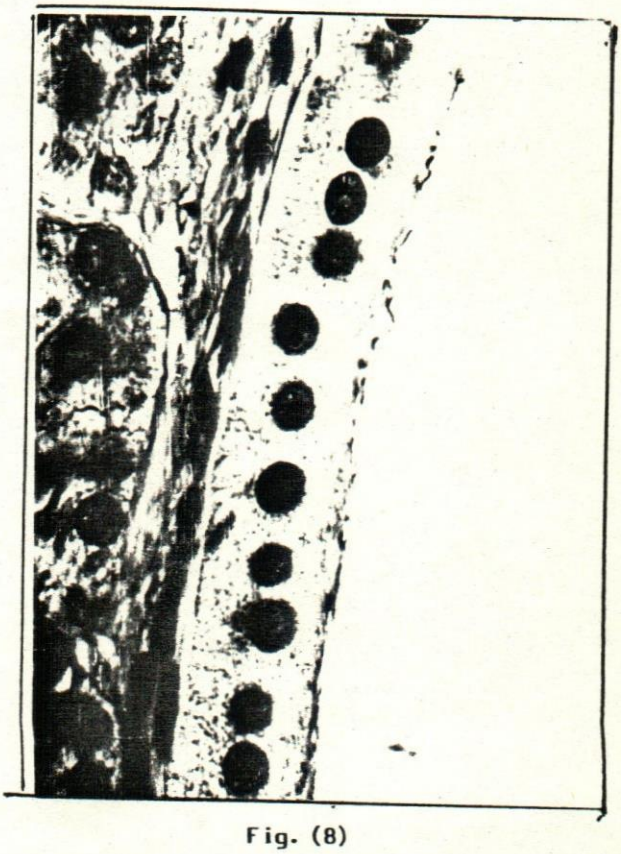
Fig. (7)

Fig. (7 B)



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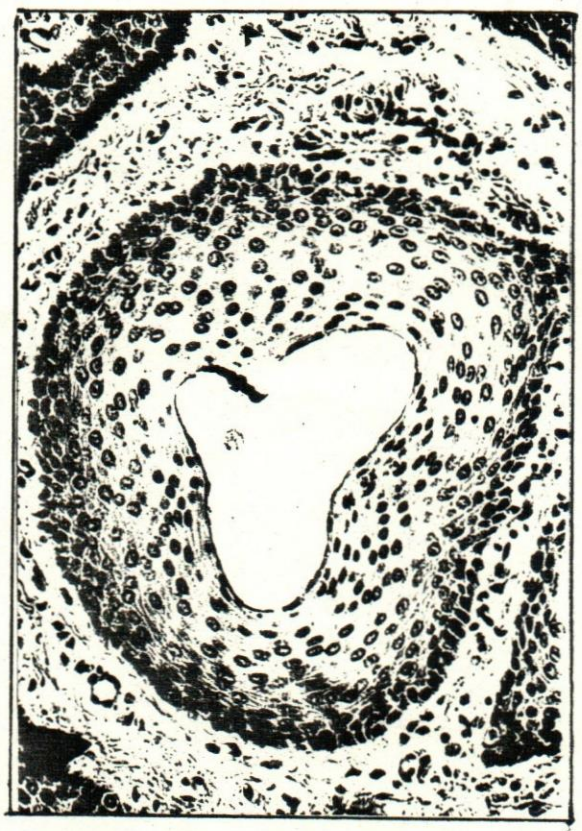

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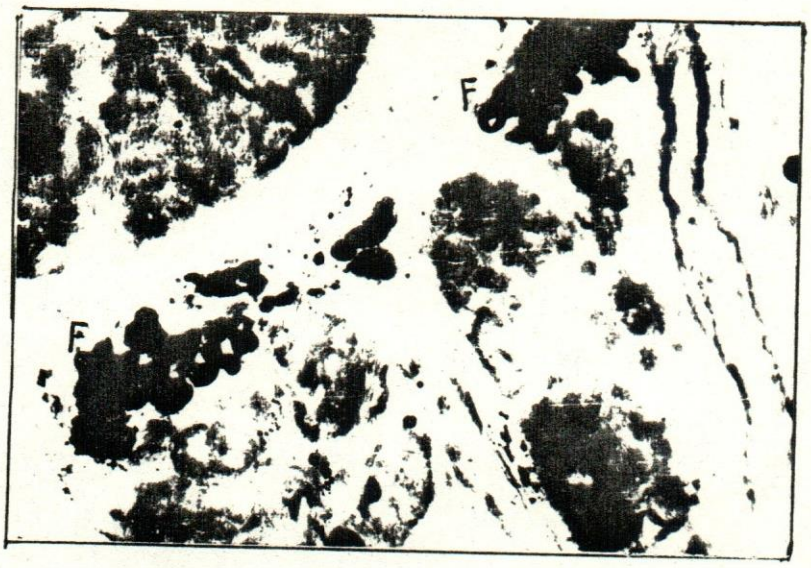

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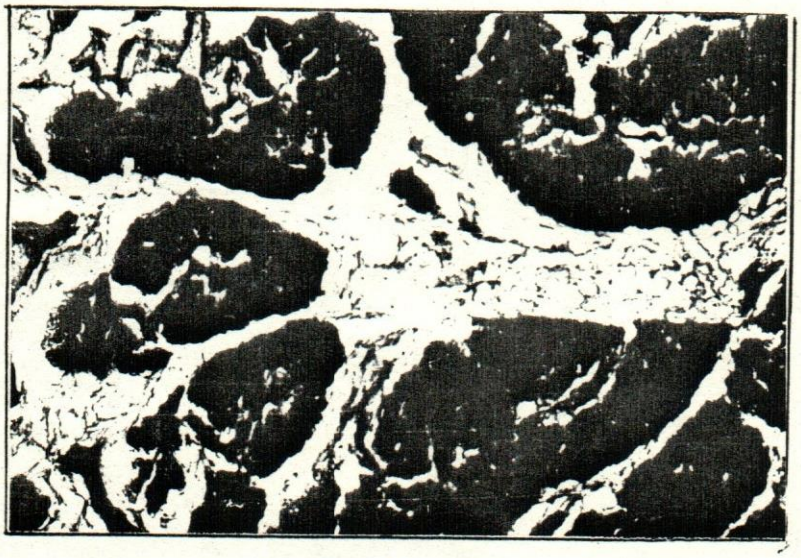

Fig. (12)