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Research Paper

HISTOLOGICAL AND HISTOCHEMICAL ANALYSIS OF THYROID GLAND IN SLAUGHTER MALE LOCAL IRAQIAN GOATS (*Capra Aegagrus*)

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The present study included of collection of thyroid gland from Basra Abattoir. The samples were fixed by 10% formalin and processed by routine histology techniques, stained by H&E, PAS, IOSMIUM tetroxide and Wiegert, stain then examine under light microscope. The histological study showed the thyroid gland surround by thin-elastic connective capsule which extend into parenchyma substance of the gland. The each lobe of gland divided into lobules by trabecular, all lobule has numerous follicular which variation in size. The follicular contain two type of cells, epithelium cell (follicular cell) and function cells (parafollicular cell), then follicles filled by colloid. The histochemical study referred to found elastic fibers in the capsule and parenchyma when stain by Wiegert stain. The gland is wealthy or substantial in carbohydrate and lipids while stained via periodic acid Schiff reagent solution and osmium potassium dichromate respectively.

Keywords: Thyroid gland, Histological, Histochemical, Male goats

INTRODUCTION

The thyroid gland is an endocrine gland which secretes thyroglobulin, triiodothyronine and thyroxin hormone. These hormone are secreted dicrct into blood stream (Getty Sisson and Grossomans, 1975; and Banks, 1993). The gland is located in frontal of upper part of trachea on mid line ventral to trachea (Amer Hussin and Muntadhar, 2009; Swsen Ali, 2014; and Mohammad Ali *et al.*, 2015) when studies on thyroid gland in donkeys, sheep, buffalo respectively.

The thyroid gland has two lobes connected by isthmus (Ahmed and Yousefi, 2012). It is composed of variation sized follicles which are lined by single layer of cuboidal epithelial cells and basement membrane (Dellemed and Brown, 1987; and Swsen Ali, 2014). The central lumen of gland filled with homogenous protein rich colloid then this gland is only gland store the hormone by large quantities.

Linda and Bacha (1990) reported the thin elastic irregular capsule surrounded the gland which extend into the parenchyma and contains dens networks of sinusoidal.

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The follicles in the gland consist of two types of cells, the first type called epithelial cells which are single layer of cuboidal cells, then another cell called parafollicular cell (function cell) which presented as single cell in epithelial lining of follicles (Zdenek Peksa *et al.*, 2011; and Swsen Ali, 2014).

The present study was targeted to form the basic data of normal histological and histochemical analysis of thyroid gland in local male goats

MATERIAL AND METHODS

Ten specimens of thyroid gland of adult male goats were collected from Basra abattoir, after examined for any infection. The specimens were preserved in 10% neutral formalin and processed for light microscope (Luna, 1986), paraffin section were stained by Harries hematoxylin and eosin, Periodic Acid Schiff (PAS) reagents for the

carbohydrate, Wiegert hematoxylin for elastic fiber tissue osmium potassium dichromate for distribution lipids in the gland tissue (Bancroft and Stevens, 1990). The slip photo by Olympus microscope.

RESULTS

Histological study showed the thin dense irregular connective capsule covered the thyroid gland which trabeculae extend into the parenchyma (Figure 1).

The gland contains different sizes of follicles which are bounded by one layer of cuboidal epithelial cells called follicular cells (Figures 1 and 2). These cells are surrounded by the basement membrane, the center lumen of the gland is filled with the colloid (thyroglobulin) (Figures 2 and 3).

In an active state gland the follicular cells become columnar shape, the other cells present in the gland called parafollicular cells which are found as

Figure 1: Photograph of Thyroid Gland Show A-Capsule, B-Lobules of Gland, H&E (10X)

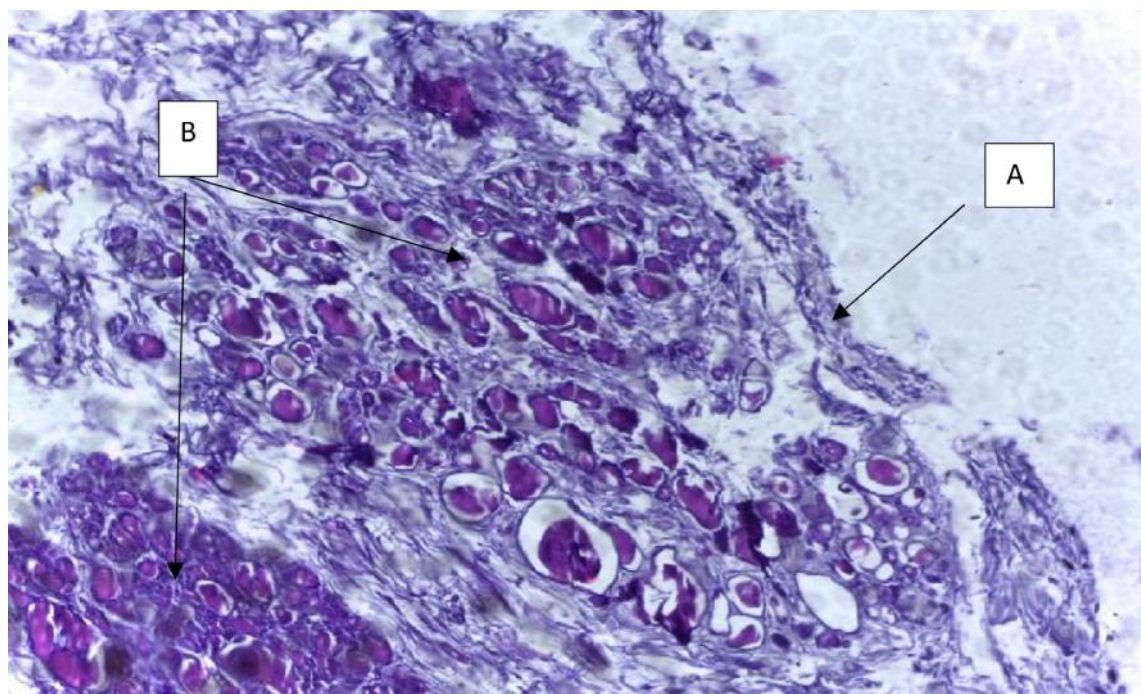


Figure 2: Photograph of Gland Show A-Variation of Follicles, B-Sept Connective Tissue, H&E (10X)

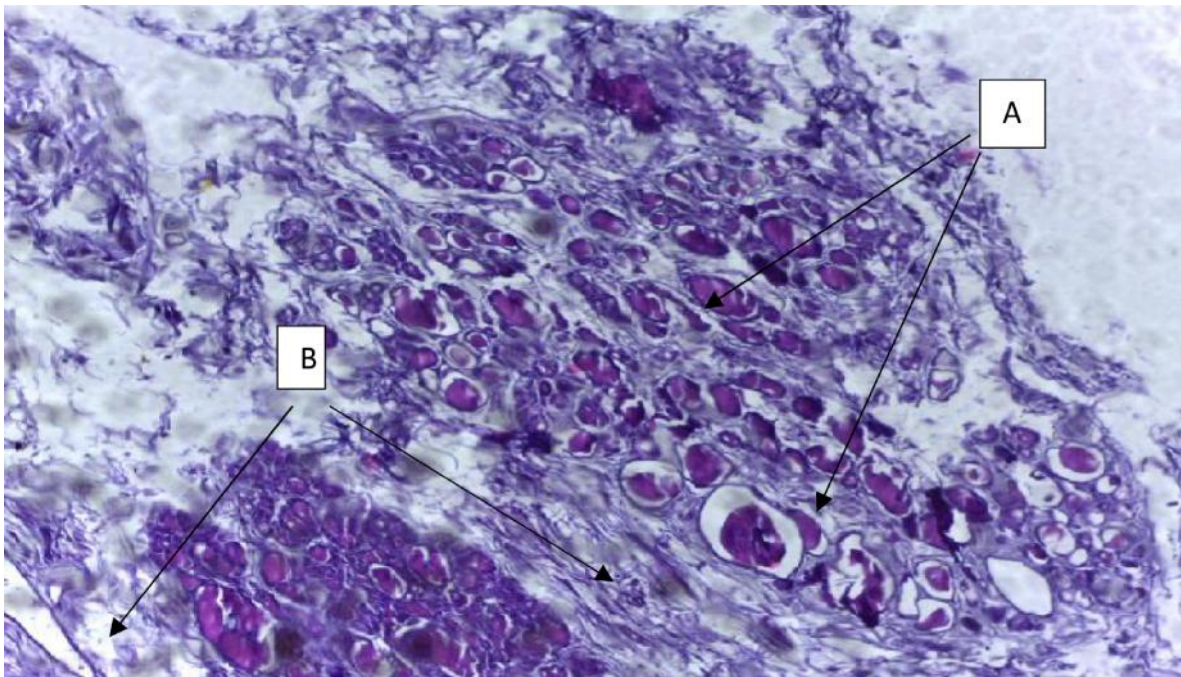


Figure 3: Photograph of Gland Show A-Follicles Cells, B-Parafollicular Cells, C-Follicles Filled with Colloid, H&E (40X)

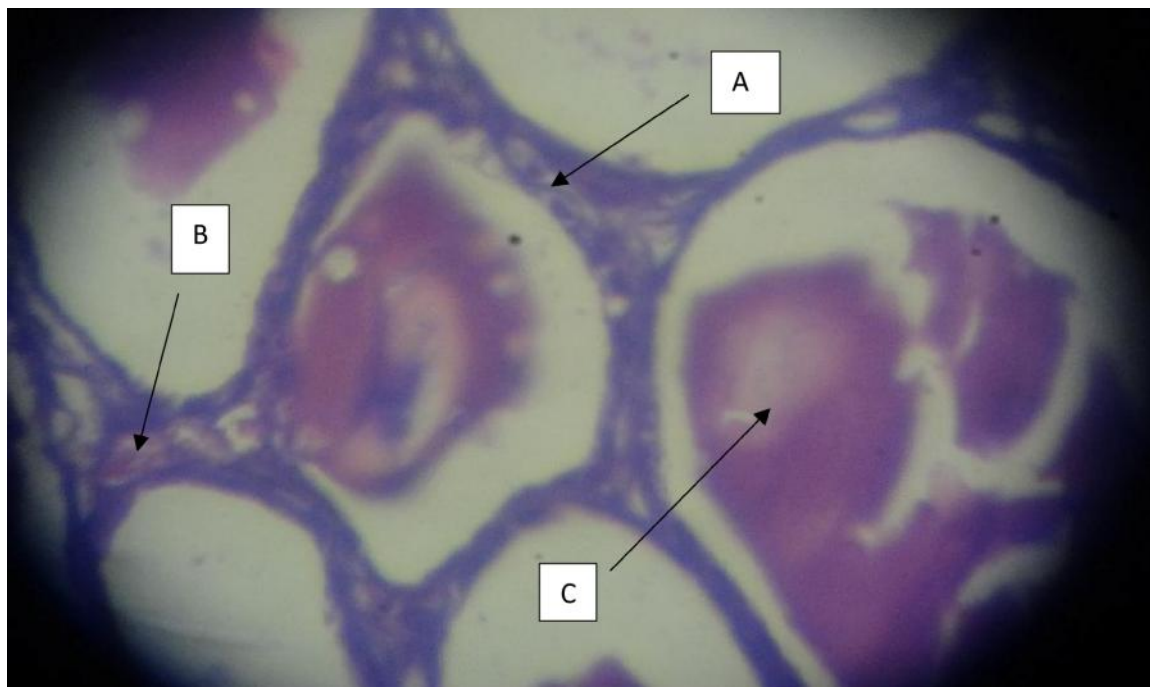


Figure 4: Photograph Show Distribution of Elastic Tissue in the Capsule and Parenchyma of Gland, Wiegert Stain (10X)

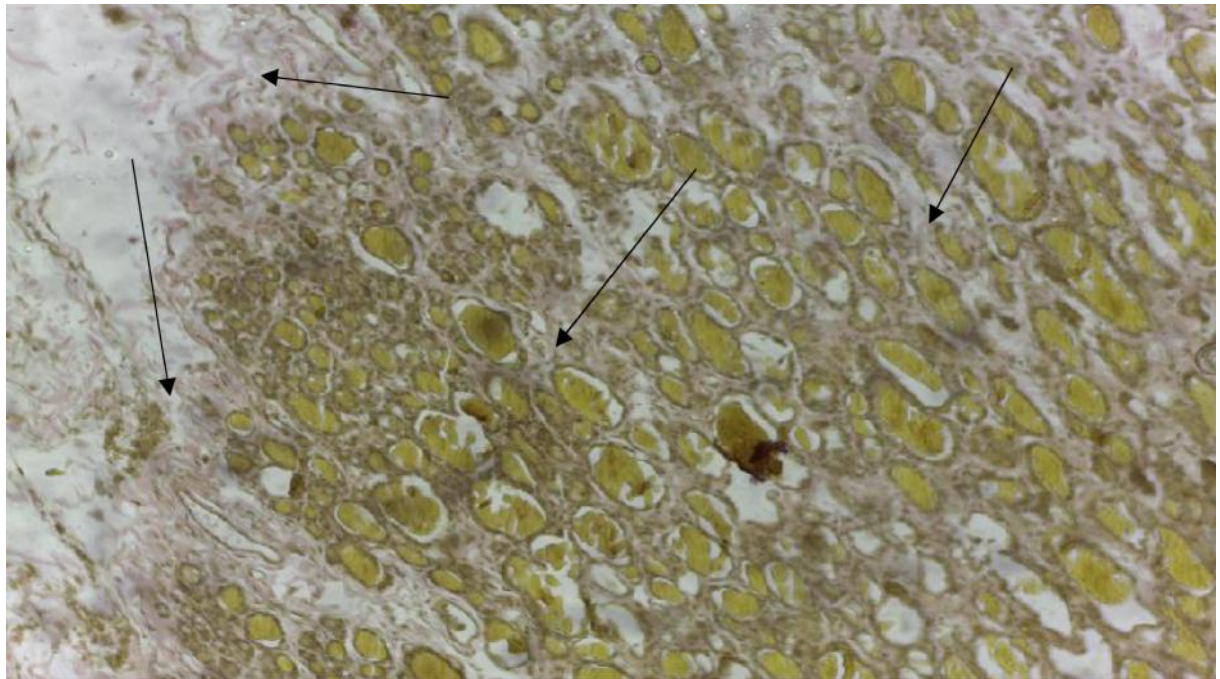


Figure 5: Photograph Show Distribution Elastic Tissue A-Capsule, B-Parenchyma in the Gland Wiegert (40X)

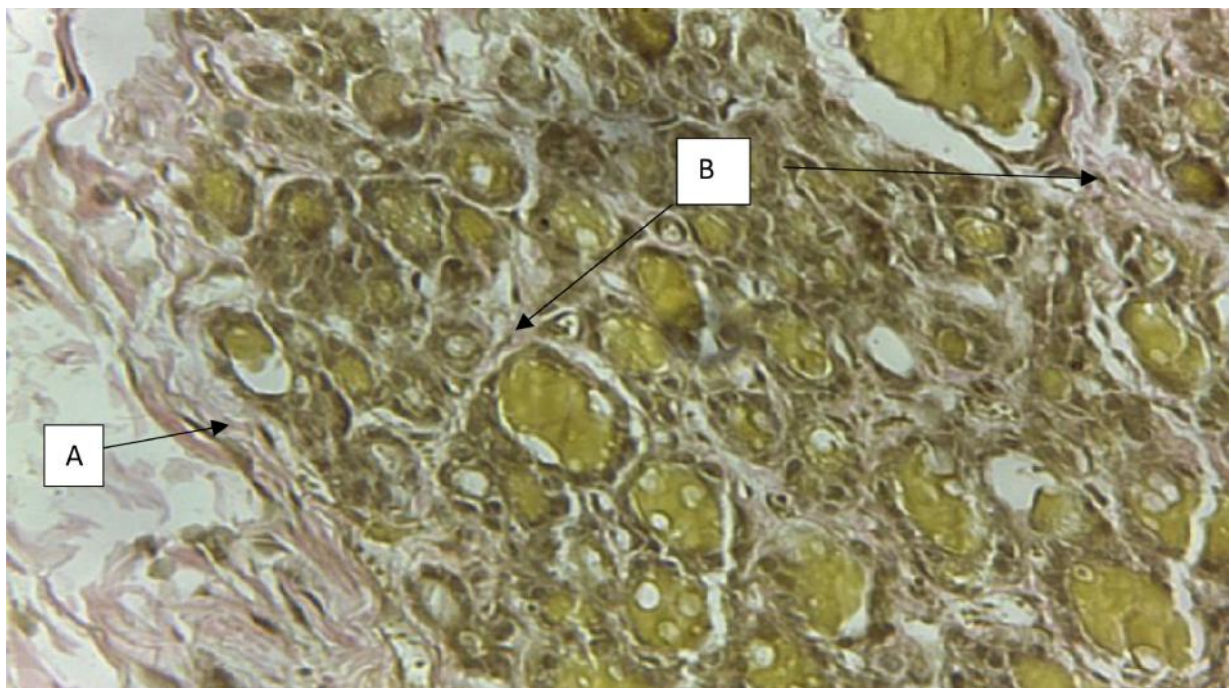


Figure 6: Photograph Show Distribution Carbohydrate in the Follicles and Parenchyma of Gland PAS (10x)

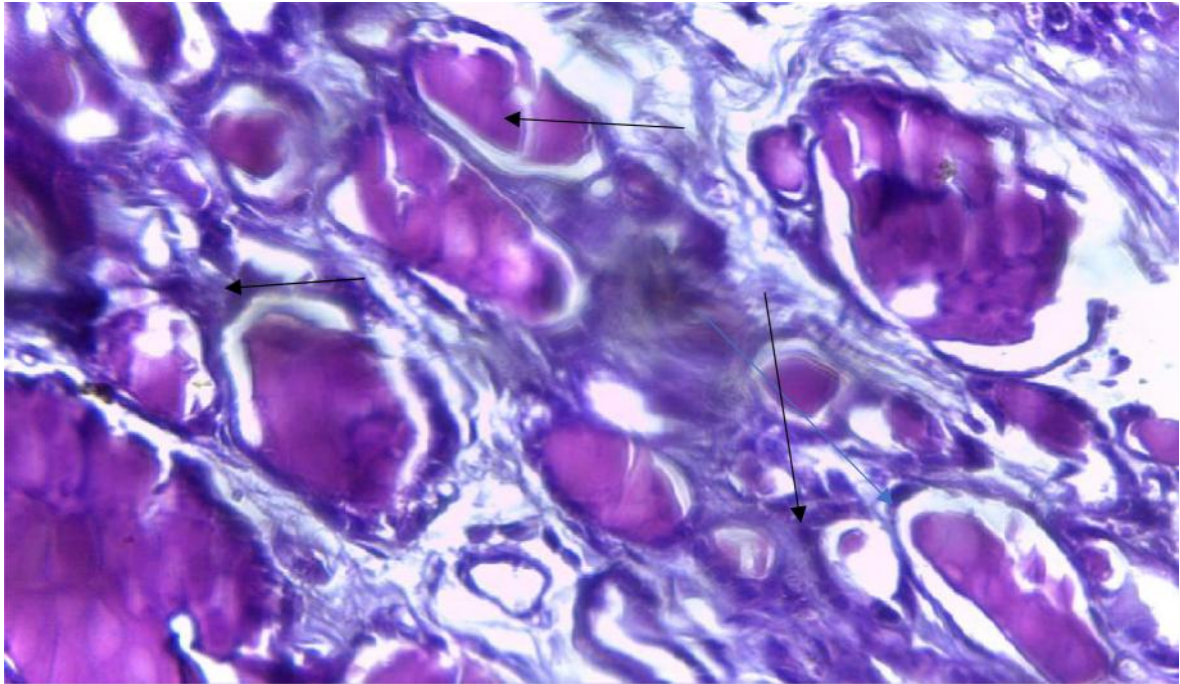


Figure 7: Photograph Show Distribution of Carbohydrate A-Inter the Follicles, B-Parenchyma of Gland, PAS (40X)

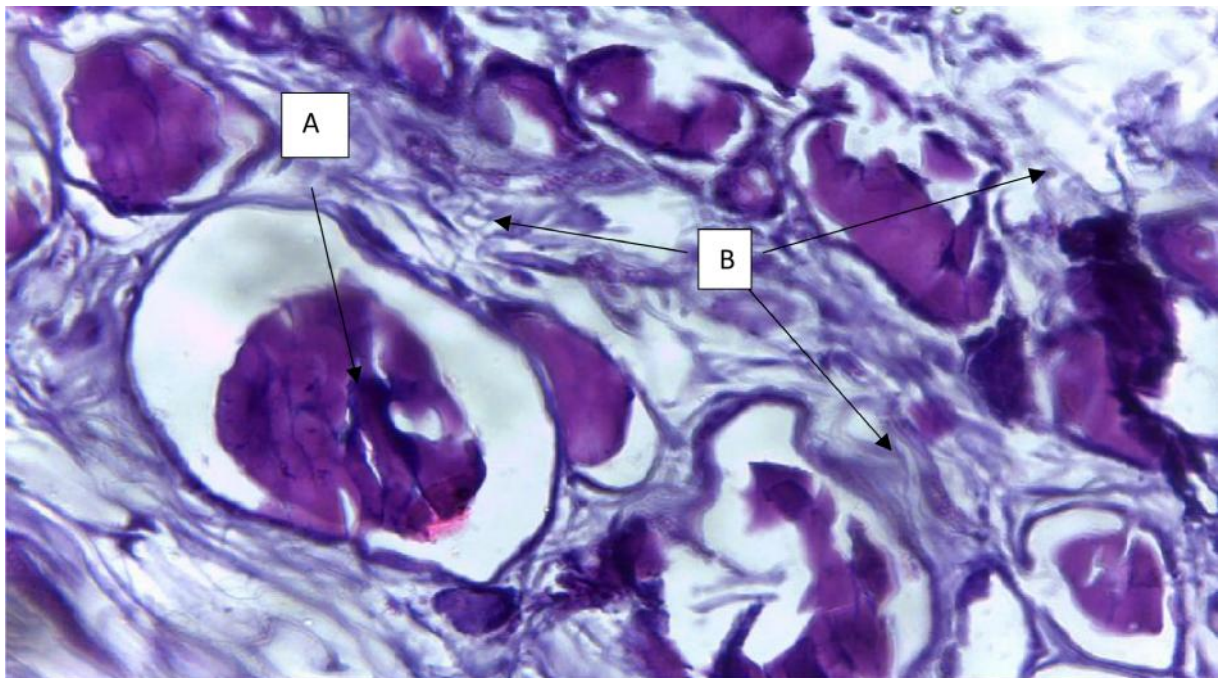
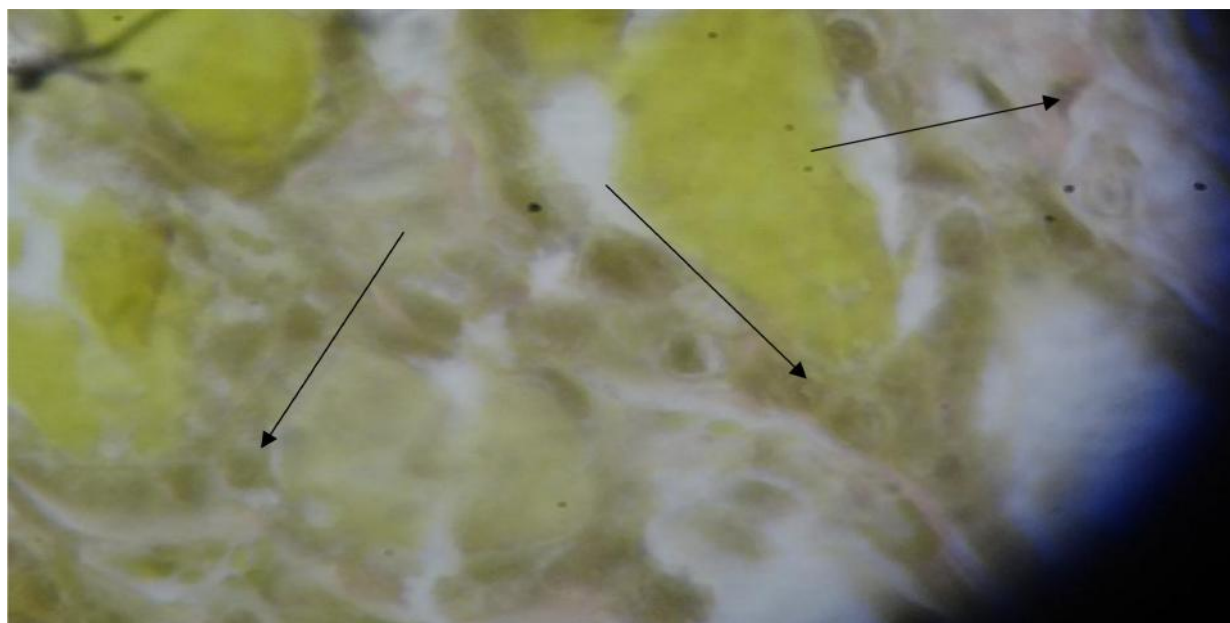


Figure 8: Photograph Show Distribution Lipid in the Gland, Osmium Tetra Oxide (40x)



single cell into epithelial of follicular, this cell characterized by single or cluster with light cytoplasmic (Figure 3).

Histochemical study.in present study used some histochemical stains:

- 1 Weigerts stain for identification elastic fibers in the gland show positive distribution elastic fibers surround the capsule which extend into parenchyma tissue appear black colour (Figures 4 and 5).
- 2 Periodic acid Schiff for diffuse the glycoprotein granules in follicles shows positive reaction appear pink colour (Figures 6 and 7).
- 3 Osmium tetroxide-dichromat which used for gland contain of lipids at follicles show distribution lipid at follicles and in connective tissue of gland (Figure 8).

DISCUSSION

Thin connective tissue capsule surrounded the

thyroid gland which trabeculae extend into parenchyma, this result agree with (Swsen Ali, 2014; Abraham *et al.*, 2015; and Mohammad Ali *et al.*, 2015) and contrast by Roy and Yadava (1975) in buffalo who registered three layers.

The gland composite of various size of follicles which bound by one layer of cuboidal follicles cells and filled with colloid. This present study same by Slomianka (2009) and Zdenek Peksa *et al.* (2011).

The second cells in follicular called parafollicular cells which single into the epithelium, it is agreement with (Samuelson Ali, 2007; and Mohammed Nouri and Babak, 2010).

Histochemical study of the gland revealed the present elastic tissue on the capsule and extend in parenchyma when staining by Wiegert stain similar to (Adhikar *et al.*, 2003; and Solliman *et al.*, 2005) who studies the thyroid gland in the black Bengal goats and white rabbits.

When staining the gland by periodic acid Schiff

show positive reaction for distribution the glycoprotein in follicles and tissue of gland, this result agreement with the when studies on thyroid gland in sheep and buffalo respectively.

The result for distribution of lipid refer to positive reaction when stain by osmium tetroxide which discovered to found lipid drops in the follicles and tissue of gland, this same with who studies on Iraqi sheep. 🌀

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