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STUDY ON COWS PLACENTA CALCIFICATION BY HISTOLOGICAL AND IMMUNOHISTOCHEMICAL METHODS

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ABSTRACT : The current histological and immunohistochemical study was appeared the general structure and detect the calcification placenta of cows. The study included 30 samples of placenta from massacres of Wasit Governorate. They were divided into six groups, according to pregnancy period of cows (1, 2, 3 and 4 months). The placenta samples were anatomized and taken parts from placenta membranes and then samples were fixed in formalin 10%. A histological study has been implemented using three type of dyes, hematoxylin and eosin to show the general histological structure, Van Kossa and Alizarin Red stain to detect the deposition of calcium salts in thetissues. The immunohistochemical technique was conducted by primary and secondary antibodies toshow absence calcification in placenta at (1M) of gestation. Whereas, very small and few points of calcification were appeared in the fetal membrane of placenta with black and dark to brown intermediated color at the (2 M, 3 M) of gestation, respectively. At (4 M) the calcium deposition were appeared affluent dark spots which scattered through chorion stroma of placental. The appearance of calcification according to digital image analysis was elevated with progress period of gestation and become more clearly toward end pregnancy.

Key words : Calcification, placenta, Von Kossa, Alizarin Red, immunohistochemistry, cows.

INTRODUCTION

Cattle are the most common type of large domesticated ungulates (although there are wild varieties as well) (Herzog, 2010). The placenta is the primary interface between the fetus and mother and plays an important role in maintaining fetal growth by performing several physiological functions, which, following birth are controlled by the kidney, gastrointestinal tract, lungs and endocrine glands. The main functions of the placenta include modulation of the mother's immune response to prevent immunological rejection termed tolerance, facilitating the exchange of respiratory gases, water, ions, nutrients and wastes between the maternal and fetal circulations and producing and secreting hormones, cytokines and other signaling molecules required to maintain pregnancy and to ensure placental and fetal development and growth (Jansson and Powell, 2007). The cow placenta is classified as polycotyledonary type, its characterized by preset multiple separate placentomes with interdigitating cotyledonary villi (villous trees) within complementary caruncles crypts.the placentomes is the functional unite of the placenta (Schmidt *et al,* 2006). Placental formation starts after day 18 to 19 of pregnancy in cattle, when the trophectoderm extends and the cells of the trophectoderm (trophoblast) establish themselves within the uterus. These cells play a key role in the growth of the placenta forming an intimate relationship with embryonic somatic cells or mesoderm to form the chorion, which thereafter becomes highly vascularized by fusing with the allantois to form the chorioallantois (Schlafer *et al*, 2000; Wooding and Burton, 2008). Histologically, the placenta consists of chorionic villi which associated with maternal side. In generally this chorion fold consists of two layers, inner layer of vascularization mesenchymal and outer chorionic epithelium (trophoblastic cells). Each villus is composed of vascular mesenchymal tissue form the cores of chorionic villi, which covered by layer of trophoblastic epithelial cells. The trophoblast cells layer contain two different epithelia cell types mononuclear trophoblast cells (Mono TC) as cuboidal to slightly irregular cells and trophoblastic giant cells (TGC). The chorion mesenchymal is connective tissue poorness in cell and fibrous with rich blood vessels (Santos *et al*, 2017).

Mineral found about 4% of vertebrate creatures of which phosphorus and calcium make up more than half of this sum (Maynard, 1979). These two minerals contain more than 70% of the mineral content of the body (Singh and Panda, 1996; Sobiech *et al*, 2010). Calcium is