Histological and Immunohistochemical Assessment of the role of Platelet-Rich Plasma (PRP) in Wound Healing in Experimentally Induced Diabetic Albino Rats

Thesis submitted for the partial fulfillment of the Master degree in Histology by

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This study aimed to evaluate the possible therapeutic effects of Platelet-rich plasma (PRP) either by topical or intraregional application in treatment of diabetic skin wounds. Fifty adult male albino rats were divided into five groups: Group I (control normal group) 10 healthy rats. Group II (Control negative group) 10 non-diabetic, wounded rats, treated by phosphate buffer saline intradermal at the site of the wound, subdivided equally into two subgroups IIA and IIB. Group III (Control positive group) 10 diabetic, wounded rats, treated by phosphate buffer saline intradermal at the site of the wound, subdivided equally into two subgroups IIIA and IIIB. Group IV (Topical PRP group) 10 diabetic, wounded rats, were treated by 250 µl PRP topically on the site of wound once at the 3rd day post wound insertion, subdivided equally into two subgroups IVA and IVB. Group V (Intraregional PRP group) 10 diabetic, wounded rats, treated by PRP with gauge needle as a single 250 µl as intraregional injection at the 3rd day post wound insertion, subdivided equally into two subgroups VA and VB. Sections were stained with hematoxylin and eosin, Mallory's trichrome and immunohistochemical stain for CD105. Wound contraction ratio, mean area percent of collagen fibers and mean number of CD105 dermal inmmunopostive cells were measured. Topical & intraregional PRP subgroups B showed increased wound contraction ratio as compared to groups IIB & IIIB with new epidermis with all its cell layers, new blood

vessels. Increased CD105 immunopostive dermal cells that were obvious in topical & intraregional subgroups A indicated early wound healing. These findings suggested that intraregional & Topical PRP application on diabetic wounds had accelerating & improving effect.