

**Evaluation the Effects of
Amelogenin/Propolis Coating on
Osseointegration of Cp Ti Implant Surface
in Rabbits**

**(Histomorphometrical and Immunohistochemical
study for Expression of Osteocalcin and Collagen I)**

A Thesis

Submitted to the Council of the College of Dentistry/
University of Baghdad

In partial fulfillment of the Requirement for degree of
Doctor of Philosophy in Oral Histology

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2014 A.D.

1435 A.H.

Abstract

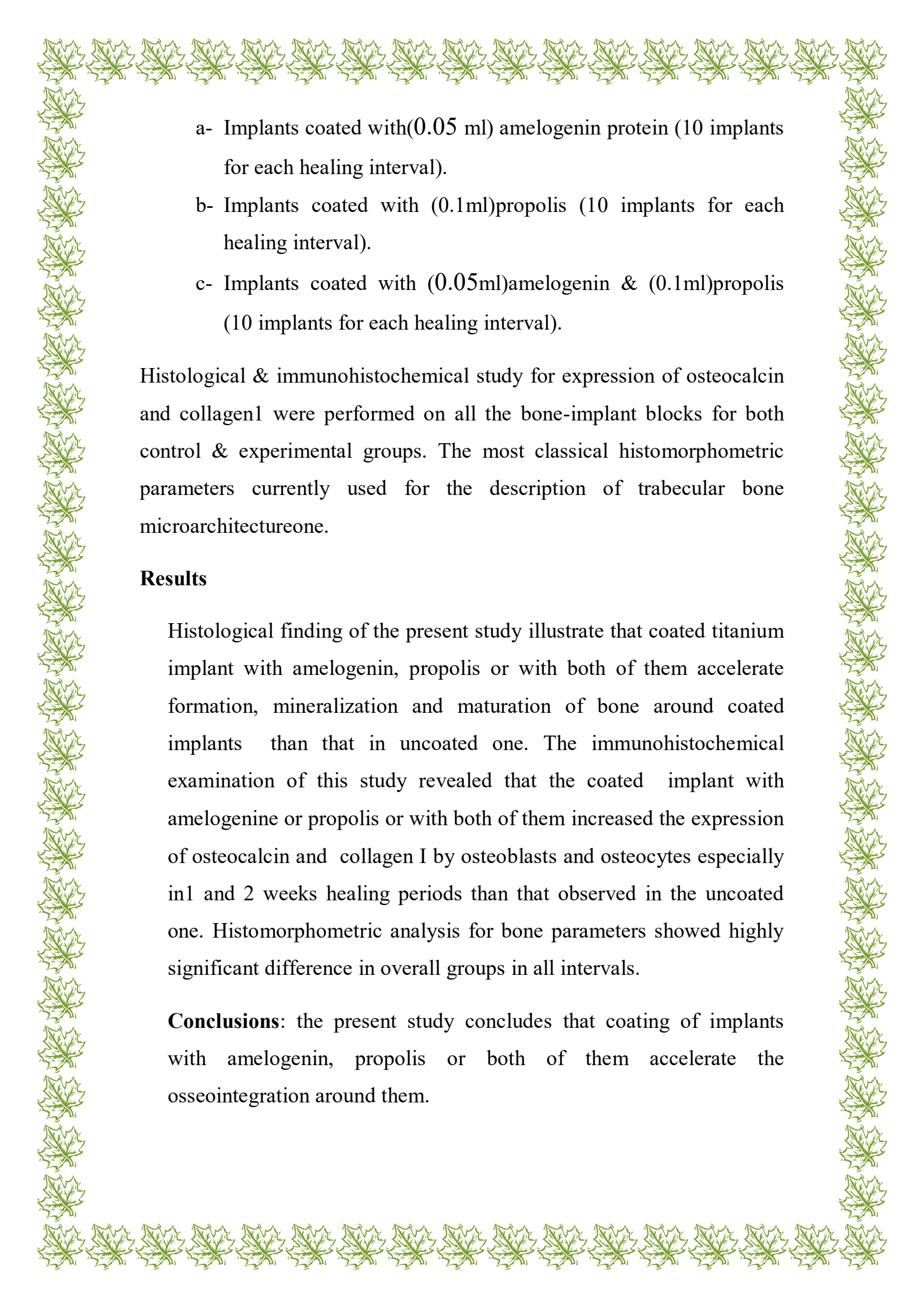
Background: Dental implant is an artificial tooth root fixed into the jaws to hold a replacement tooth , bridge or a complete prosthesis. Many studies have compared the efficiency of various surface treatments in improving bone tissue integration of implants, these studies describe a variety of cellular responses to various implant surface conditions. Amelogenin is the major component of the enamel matrix derivative. Amelogenin expression was detected in normal and regenerating cells of the alveolar bone (osteocytes, osteoblasts and osteoclasts) highest in areas of high bone turnover and activity. The ethanolic extracted propolis have influence on regeneration and acceleration of bone tissue at a defected area. Enhancement of normal osteoblast function and appositional bone formation after implant placement represents a strategy that can be useful for the purpose of improving osseointegration.

Aims of the study: To evaluate the effects of the coated biomaterial (amelogenin, propolis and both) on osseointegration of titanium implant histologically , immunohistochemically and histomorphometrically.

Materials and Methods: One hundred sixty machined surface Iraqi implants from commercially pure titanium rod were inserted in 40 male adult white New Zealand rabbits. Four Titanium implants were placed in the tibias of each rabbit (two implants in each tibia). The animals were scarified at 1 , 2, 4 and 6 weeks after implantation (10 rabbits for each interval).

The implants were categorized into:

- 1- Control group (40 uncoated implants): this group includes 10 implants for each healing interval (1,2,4 & 6weeks).
- 2- Experimental group (120 coated implants):those were divided into:

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- a- Implants coated with (0.05 ml) amelogenin protein (10 implants for each healing interval).
 - b- Implants coated with (0.1ml)propolis (10 implants for each healing interval).
 - c- Implants coated with (0.05ml)amelogenin & (0.1ml)propolis (10 implants for each healing interval).

Histological & immunohistochemical study for expression of osteocalcin and collagen1 were performed on all the bone-implant blocks for both control & experimental groups. The most classical histomorphometric parameters currently used for the description of trabecular bone microarchitectureone.

Results

Histological finding of the present study illustrate that coated titanium implant with amelogenin, propolis or with both of them accelerate formation, mineralization and maturation of bone around coated implants than that in uncoated one. The immunohistochemical examination of this study revealed that the coated implant with amelogenine or propolis or with both of them increased the expression of osteocalcin and collagen I by osteoblasts and osteocytes especially in1 and 2 weeks healing periods than that observed in the uncoated one. Histomorphometric analysis for bone parameters showed highly significant difference in overall groups in all intervals.

Conclusions: the present study concludes that coating of implants with amelogenin, propolis or both of them accelerate the osseointegration around them.