

CHAPTER 5

CONCLUSION

The assessment of bone-replacement materials is only possible against the background of current experience with bone transplants. It is generally accepted that autogenous grafts are the only bone-transplants with an osteogenic effect, only these grafts contain cells which are capable of permanent proliferation and osteoregeneration.

The CGS graft material investigated in this current study are of course not capable of osteogenic bone regenerating from the implant, since they do not contain bone-forming cells. However, the CGS represent matrices that attempt to simulate the physical and chemical properties of cancellous bone, the porous structure. Moreover, there was an *in vitro* study which CGS played as a scaffold for fibroblast proliferation. (Kwunchit Oungbho, 1997b) Therefore, the further studies were performed by using CGS contained bone-forming cells to achieve the ideal bone grafting material properties.

From the literature review, the osteogenic capacity of chitosan derivatives was observed by numerous authors but no any studies in CGS. Recently, CGS was used as a controlled released drug carrier in pharmaceutical technology. (Kwunchit Oungbho,1997b) Therefore, CGS would be a carrier for osteoinductive factors such as bone morphogenetic proteins (BMPs), transforming growth factor (TGF- β) or platelet-riched plasma (PRP) which all factors have been proven to initiate bone formation. (Bostrom, Saleh and Einhorn, 1999) However, there still need the further studies for observation in these capacity of CGS.

In addition, the rabbit calvarial model which mainly was cortical membranous bone also have less osteogenic cells and fibrovascular tissue. Therefore, the observation in osteoconductive capacity of CGS has been difficult to notice. Thus, the further studies should be performed in other implantation site which contains both cortical and cancellous bone.

Although, there are numerous of bone replacement materials today but it will still be necessary to use autogenous graft in future when the conditions for healing of the bone defect are unfavourable due to the poor regenerative capacity of the recipient bed (inadequate circulation, infection, very large bone-substance defects and local deficiency of osteogenic cells).