# CHAPTER I
# INTRODUCTION

Wound dressings are used to cover the wounds and accelerate healing. Nowadays, there are two kinds of wound dressing : dry and wet dressing. The dry dressing are made from open gauze which has some drawbacks for application. When dressing dries, fibrin from the wound bed causes temporary bonding of the dressing to the wound, the dressing is peeled off the wound fibrin, debris and necrotic tissue are removed (Stashak *et al.*, 2004). On the other hand, the problems above mentioned that no occurred on the wet dressing due to it can maintain the humidity at the wound/dressing interface. It has been reported that the wet wound dressing has more effect on healing than the dry wound dressing (Nho *et al.*, 2004) due to the fact that renewed skin, without the formation of eschar, takes place during healing in a wet environment. From some drawbacks of dry dressing above, then the dressing should be develop to the more suitable wound dressings.

Hydrogels are a three dimensional network of hydrophilic polymer chains that can absorb water several times without being dissolved. Hydrogels are the wet dressing, which have many interesting properties: biocompatibility, immediate pain reduction, easy to replacement, absorbance and prevention of loss of body fluids, good adhesion, good handing, and oxygen permeability.

In this research, the main targets of the present work are synthesis of *N*-trimethyl chitosan and carboxymethyl chitosan, and preparation of the PVA hydrogels containing *N*-trimethyl chitosan and carboxymethyl chitosan by γ-irradiation technique. The properties of the blended hydrogels such as gel fraction, swelling behavior, weight loss, water vapor transmission, mechanical properties and antibacterial activity were investigated. The aim of this study is to develop a novel hydrogels with potential for application in the biomedical field.