

## S2-1.5

### **Enhancement of Antioxidant and Antibacterial Activities by Immobilization of Natural Bactericide into Hybrid Supra-molecular Chitosan Bio-composite Gel**

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Natural polyphenols are of significant morphological and physiological importance in plants. In particular, natural polyphenols have been reported to possess antioxidant, antibacterial and antifungal properties. However due to their low solubility in water, modification and improvement of physico-chemical properties of these compounds are of high interest among researchers. Therefore after depolymerization processes of these tannins, a product with increased water solubility have been obtained. Nevertheless these new products could undergo autooxidation reactions and shortening the action of biological activities. Following this, bio-matrix such as chitosan is considered to be the best choice for efficient entrapment of these modified polyphenols with prolongation of their biological activities.

The difficulties in finding the right treatment for open trauma skin infections and efficient drugs inhibitors for bacteria growth are well known. For these reasons, in this work has been purposed immobilization of modified natural polyphenol bactericide into hybrid supra-molecular chitosan bio-composite gel with enhanced antioxidant and antibacterial properties for biomedical applications. For determination of antioxidant activities, ABTS and DPPH methods have been employed and it was observed that new bio-composite gel have an increased antioxidant activity with the inhibition of 91% of DPPH radicals in comparison with chitosan gel (55%) alone.