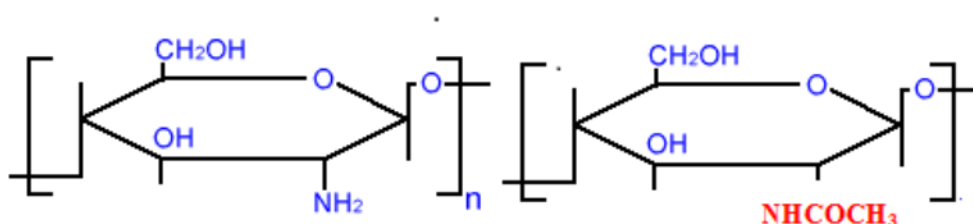


### 1.4.6. What is Chitosan?

Chitosan is a natural polymer obtained by N-deacetylation of chitin. After cellulose, chitin is the second most abundant polysaccharide in nature. It is biologically safe, non-toxic, biocompatible and biodegradable polysaccharide (Sailaja et al., 2010).

Chitosan is a linear copolymer consisting of  $\beta$  (1-4)-linked 2-amino-2-deoxy-D-glucose (Dglucosamine) and 2-acetamido-2-deoxy-D-glucose (N-acetyl-D-glucosamine) units (Figure 1.4). Chitosan is a weak poly base due to the large quantities of amino groups on its chain (Sarmiento & das Neves, 2012).



(Figure 1.4): Chemical structure of Chitosan.

The physiochemical properties of chitosan polymer can be manipulated through two parameters: the molecular weight (M.W.) which is the sum of the weights of the atoms of which it is made) and the degree of deacetylation (DDA %) defined in terms of the percentage of primary amino groups in the polymer backbone. The DDA % of typical commercial chitosan is usually between 70%-99% and the M.W. between 10-1000 kDa (Gao & Wan, 2006).