

1.4 Glucosamine (GlcN)

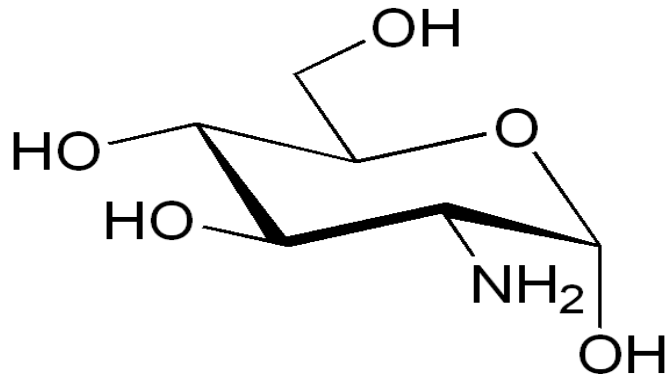


Figure 1.5 Chemical structure of glucosamine.

Glucosamine (GlcN) (2-amino-2-deoxy-d-glucose) is one of several 6-carbon amino sugars naturally occurring in the body which is water soluble and is generally nontoxic (**Figure 1.5**). GlcN is a monosaccharide compound generated by hydrolysis of chitosan or chitin. It is one type of amino sugars that are considered as an important building blocks for mucoproteins, mucopolysaccharides, and mucolipids such as heparin, hyaluronic acid and chondroitin (Al-Hamidi *et al.* 2010; Kirkham and Samarasinghe 2009; Xing *et al.* 2006). Chitosan is a polymer made from acetylglucosamine units and its structure is basically composed of D-glucosamine monomer units. It is the N-deacetylated derivative of chitin, which is present in the exoskeletons of crustaceans, fungi cell walls, and cuticles of insects (Guibal 2005; Liu *et al.* 2006).

GlcN is found in most of human tissues such as GIT mucosal membranes, higher concentrations are found in connective tissues (e.g., cartilage). GlcN can be found in many forms, including hydrochloride, chlorohydrate sulfate salt, N-acetyl-glucosamine, and as a