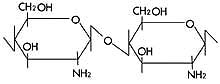
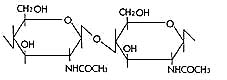
**4- Chitin and Chitosan:**

Chitin is one of the most abundant polysaccharides found in nature. It is found naturally in the shells of crustaceans, insect exoskeletons, fungal cell walls,micro fauna and plankton. It is found in association with proteins and minerals such as Calcium Carbonate. Chitin is a homopolymer of 2-acetamido-2-deoxy- D -glucose (N-acetylglucosamine) 1 →4 linked in a β configuration forming a long chain linear polymer. It is thus an amino sugar analog of cellulose . Chitin is insoluble in most solvents.



Chitosan is a useful derivative of chitin by removing most of the acetyl groups of chitin using strong alkalis. To obtain a soluble product the degree of deacetylation of chitosan must be 80% to 8 5% or higher; i. e. the acetyl content of the chitosan product must be less than 4% - 4 . 5% . Chitosan is a semicrystalline polymer and the degree of crystallinity is a function of the degree of deacetylation .

**Chitin Chitosan**



Chitosans are characterised by two principal factors : viscosity and degree of deacetylation, the control over these two parameters allows the production of a wide range of chitosans which can be used in [medical and industrial fields](http://www.france-chitine.com/util.e.html)

Crystallinity is maximum for both chitin (i. e. 0% deacetylated) and fully deacetylated chitosan. Minimum crystallinity is achieved at intermediate degrees of deacetylation. Because of the stable, crystalline structure, chitosan is normally insoluble in both organic solvents and aqueous solutions at a pH above 7. However, it dissolves readily in most dilute organic acids solutions, such as formic, acetic, tartaric, and citric acids because the free amino groups are protonated and the molecule become fully soluble below pH 5. Chitosan is soluble to a limited extent in dilute inorganic acids except phosphoric and sulfuric acids. The pH-dependent solubility of chitosan is a very useful property, which provides a convenient mechanism for processing chitosan products under mild conditions. For example, viscous solutions of chitosan can be prepared at lower pH and then extruded and gelled in high pH solutions or baths of nonsolvents such as methanol. The obtained gel fibers can be subsequently drawn and dried to form high-strength fibers .