

biosynthesis of glycosaminoglycans, glycoproteins and other compounds which are all essential for the structure and function of joints.

### Pharmacokinetics

As the molecular mass of glucosamine is relatively small (Molecular Weight is 179.17 as a free base) and hydrophilic in nature (Persiani et al., 2005). The distribution volume is approximately 5 litres in which it is distributed to liver, kidney and other tissues including the articular cartilage.

Glucosamine sulphate is well absorbed orally but undergoes substantial first-pass metabolism. Half-life after intravenous administration is nearly 2 hours and its elimination half-life after oral administration is 48-62 hours with 38% of an intravenous dose of glucosamine is excreted in the urine as unchanged substance, whereas faecal excretion of glucosamine is scarce (MHRA, 2009).

The absolute bioavailability of glucosamine is unknown. In vitro, glucosamine does not bind with plasma proteins. Therefore, it freely diffuses through biological barriers as also its pKa is 7.52 at 20 °C and 6.91 at 37 °C.

Pharmacokinetic studies have suggested that glucosamine is generally a substrate for the synthesis of mucopolysaccharides rather than a source of energy (Kirkham et al., 2009). There is a latency of four to eight weeks before the therapeutic effect emerges (Kirkham et al., 2009).

### Pharmacodynamics

Scientific evidence supports use of glucosamine sulphate for treatment of mild to moderate osteoarthritis of the knee (Kirkham et al., 2009; Towheed et al., 2009). The