6. Pharmacokinetics

a majority of drugs act one of the. On something called as a target. So drug does not act on the cell on the whole, but instead it acts pretty much a specific target. This target can be an enzyme which typically is a protein. It can also be a receptor. So receptor is something that is on the surface which recognizes ligands and it. Helps with signal transmission. Nucleic acids are very important targets because they carry genetic. Information. DNA carries genetic information. RNA also carries information about how proteins are synthesized and RNAs themselves can be catalysts. We are going to look at another aspect of how this entire foundation is going to be used, which is in pharmacokinetics. So after we understand this we also want to put this in perspective of the human body. So in this context, now let us look at what happens to a drug once it is administered.

An Important characteristic of a drug is that it must survive the stomach. So if it survives the attack, then it passes through the cells lining the gut wall. Then it enters the upper intestine where it encounters further digestive enzymes, and this helps to break down the food further. So at this stage, the drug passes between cells rather than through cells. so the drug actually passes between the cell rather than passing through them. So liver contains a huge range of enzymes which are ready and waiting to intercept foreign chemicals. The major role of the enzymes is to make the drug or the foreign molecule into easily excretable species. And this process is called as metabolism. The drug then has to be carried by the blood supply around the body to reach its eventual target. So a drug must have the right balance of water and fat. Solubility. The demands made on a orally consumed drug is extremely high., so the drug must be stable to chemical and enzymes. It must also reach the target in therapeutic concentrations. if the drug is too hydrophobic, it will be poorly soluble and what happens is it dissolving in these fat globules. This will lead to poor absorption.

Amines are often involved in drug s binding interactions. amines can be neutral in the form of RNh2, but can also be protonated to form RNh3.. When are in the neutral form they can actually be fat soluble and when they are protonate they can be water-soluble. So this balancing of the requirements can be achieved by amines. The hydrophilic or hydrophobic character of the drug is a crucial factor in affecting absorption. In theory, the molecular weight of a drug is not very relevant. So there are many examples of compounds which have high molecular weight, but can be easily absorbed through the gut. So the hydrophobicity is an, is more important in affecting how well the absorption occurs. So Lipinski came up with his rule of five. The rate and extent of distribution depends on a number of factors including the physical properties of the drug. Drug itself. The blood vessels that carry out the blood are called arteries or veins, and there are very small vessels which are called as capillaries. it is from these that oxygen, nutrients and drugs can escape into the neighboring area.