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**Paper:- pharmacology**

**Ans No :-1**

**Routes of drug administration**

- 1. Oral route**
- 2. Paranteral route**
- 3. Nasal route**
- 4. Tarnsdermal route**
- 5. Rectal route**
- 6. Inhalation route**
- 7. Vaginal route**

## **Parantral route:-**

A route of administration is the path by which a drug, fluid, poison or other substance is brought in contact with the body.

Parenteral dosage forms are intended for administration as an injection or infusion. Common injection types are intravenous (into a vein), subcutaneous (under the skin), and intramuscular (into muscle). Infusions typically are given by intravenous route. Parenteral dosage forms may be solutions, suspensions, or emulsions, but they must be sterile. If they are to be administered intravenously, they must readily mix with blood.

**Ans No:-2**

**Water compartment:-**

Body fluids can be discussed in terms of their specific fluid or water compartment, a location that is largely separate from another compartment by some form of a physical barrier.

**Extracellular Fluid:-**

Extracellular fluid (ECF) or extracellular fluid volume (ECFV) usually denotes all the body fluid that is outside of the cells. The extracellular fluid can be divided into two major subcompartments: interstitial fluid and blood plasma.

The extracellular fluid also includes the transcellular fluid; this makes up only about 2.5% of extracellular fluid. In humans, the

normal glucose concentration of extracellular fluid that is regulated by homeostasis is approximately 5 mm. The pH of extracellular fluid is tightly regulated by buffers and maintained around 7.4.

### **Interstitial fluid:-**

Interstitial fluid is the fluid that directly bathes the cells and tissues in the body. It is generally about 75% of the volume of Extracellular fluid (or ~10.5 L).

### **Plasma compartment:-**

Plasma is the fluid portion of blood (i.e., whole blood minus the so-called formed elements; red cells, white cells, and platelets). The volume of plasma is about 3 L and is generally about 25% of the volume of Extracellular fluid.

### **Intracellular fluid:-**

The intracellular fluid (ICF) compartment is the system that includes all fluid enclosed in cells by their plasma membranes.

The intracellular fluid lies within cells and is the principal component of the cytosol/cytoplasm. The intracellular fluid makes up about 60 percent of the total water in the human body, and in an average-size adult male, the intracellular fluid accounts for about 25 liters of fluid.

**Ans No:-3(1)**

### **Drug Elimination:-**

Drug elimination can be defined as the (irreversible) transfer of a drug from the site of measurement (usually plasma or blood) by either excretion (e.g., renal, biliary,

pulmonary, sweat and milk excretion) or metabolism.

## **Drug Elimination Stages:-**

### **Renal excretion**

Drug elimination also changes during pregnancy due to a significant increase in renal excretion. During pregnancy, there is an increase in the flow of blood to various organs including an increase in effective renal plasma flow which results in a corresponding increase in the glomerular filtration rate. This increase in renal clearance can have notable effects on drugs that are eliminated by the kidneys.

### **Distal tubular reabsorption:**

To be extensively excreted in urine, a drug or metabolite must be water soluble and must not be bound too tightly to proteins in

the bloodstream. The acidity of urine, which is affected by diet, drugs, and kidney disorders, can affect the rate at which the kidneys excrete some drugs. In the treatment of poisoning with some drugs, the acidity of the urine is changed by giving antacids or acidic substances orally to speed up the excretion of the drug.

### **Drug elimination in the bile:-**

Some drugs pass through the liver unchanged and are excreted in the bile. Other drugs are converted to metabolites in the liver before they are excreted in the bile. In both scenarios, the bile then enters the digestive tract. From there, drugs are either eliminated in feces or reabsorbed into the bloodstream and thus recycled. If the liver is not functioning normally, the dosage of a drug that is eliminated primarily

by metabolism in the liver may need to be adjusted. However, there are no simple ways to estimate how well the liver will metabolize (and thus eliminate) drugs like there are for kidney function.

**Ans No:-3(2)**

**Total body Clearances:-**

The term clearance describes the process of drug elimination from the body or from a single organ without identifying the individual processes involved. Clearance may be defined as the volume of fluid cleared of drug from the body per unit of time. The units for clearance are milliliters per minute or liters per hour. The volume concept is simple and convenient, because all drugs are dissolved and distributed in the fluids of the body.

The advantage of the clearance approach is that clearance applies to all elimination rate processes, regardless of the mechanism for elimination. In addition, for first-order elimination processes, clearance is a constant, whereas the rate of drug elimination is not constant. For example, clearance considers that a certain portion or fraction of the distribution volume is cleared of drug over a given time period.

**The End.**