BSc Pharmacology – Module 1

Principles of Pharmacodynamics and Pharmacokinetics

**Drug Metabolism Tutorial**

**Q1 – Answer the following general questions on drug metabolism:**

* List three consequences of metabolism.
* Where in the cell is CYP450 located?
* Give two examples of phase 1 and 2 transformations and name the co-factors/enzymes required.
* Which of following are required by CYP450 – NADPH/O2/Zinc/H2O/NADH-CYP450- reductase?
* Is N-demethylation a result of C-oxidation or N-oxidation?
* Is glutathione conjugation the result of a chemical reaction or an enzyme mediated reaction?
* Which amino acid is commonly used in amino acid conjugation reactions?
* What biotransformation might inorganic mercury undergo in a biological system?

**Multiple choice; Choose the most appropriate answer:**

**Q2 – The phenomenon of enterohepatic recirculation of a chemical causes:**

1. a decrease in the volume of distribution
2. an increase in the whole body half-life of a chemical
3. a decrease in the metabolism of the compound
4. a decrease in the whole body half-life
5. zero order elimination of the chemical

**Q3 – the term ‘first-pass effect’ means which of the following:**

1. the drug is excreted unchanged
2. the drug is mostly metabolised by the GI tract and/or liver before reaching the systemic circulation
3. the drug is completely absorbed from the GI tract
4. the drug is excreted completely and very quickly by the kidneys
5. none of the above

**Q4 - Write notes on the following:**

1. Glutathione
2. Biliary Excretion
3. Gut Bacteria and Drug metabolism

**Q5 – The structures of aspirin, isoniazid and paracetamol are shown below – show the likely Phase 1 and 2 biotransformations of each drug and name the enzymes/co-factors required for each reaction. Where would you expect the metabolites you identify to be excreted.**

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**Aspirin**

**Paracetamol**

**Isoniazid**