Year 2003 Paper two: Questions supplied by Tricia

Question 63

Which one of the following medications is most likely to result in an increase in circulating insulin concentrations?

A. Metformin
B. Acarbose
C. Rosiglitazone
D. Repglinide
E. Orlistat (Xenical)

Metformin
- Antihyperglycaemic agent, which improves glucose intolerance in T2DM subjects lowering both basal and postprandial plasma glucose. Metformin causes an increased peripheral uptake of glucose by increasing the biological efficiency of available exogenous or endogenous insulin
- The mode of action of metformin may be linked to increased insulin sensitivity. It does not stimulate insulin release but does require the presence of insulin to exert its antiyperglycaemic effect. Possible mechanisms of action include inhibition of gluconeogenesis in the liver, delay in glucose absorption from the gi tract and an increase in peripheral uptake of glucose.

Acarbose
- Hypoglycaemic agent
- Acarbose action depends on an inhibition of intestinal enzymes (alpha-glucosidases) involved in the degradation of ingested disaccharides, oligosaccharides and polysaccharides, but not monosaccharides. Maximal specific inhibitory activity is against sucrose. This leads, dose dependently, to a delayed digestion of the above carbohydrates. The result is that absorbably monosaccharides (dextrose) originating from carbohydrates re released more slowly and hence are taken up into blood more slowly.

Rosiglitazone
- Hypoglycaemic agents
- A selective and potent agonist at the peroxisomal proliferator activated gamma nuclear receptor and is a member of the thiazolidinedione class of antidiabetic agents
- Improves glycaemic control by improving insulin sensitivity at key sites of insulin resistance, namely adipose tissue, skeletal muscle and liver

Repglinide
- A novel short-acting oral hypoglycaemic agent structurally unrelated to the sulfonylureas drugs. It lowers blood glucose levels acutely by stimulating the release of insulin from the pancreas, an effect which is dependent upon functioning beta-cells in the pancreatic isles.

Orlistat (Xenical)
- Anorectic and weight reducing agent
- Potent, specific and reversible long acting inhibitor of gastrointestinal lipases, which are required for the systemic absorption of dietary triglycerides