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DEPARTMENT: MBBS

**1. Define the following terms**

A. KETOGENESIS

Ketogenesis can be defined as the formation or synthesis of ketone bodies in the liver. Tge enzymes for ketone body synthesis are located in the mitochondria matrix.

B. KETONAEMIA

Ketonaemia is an increase in the amount of ketone bodies in the blood.

C. KETONURIA

This is the excretion of ketone bodies in urine.

**2. What are the consequences of ketosis**.

**i. Metabolic acidosis:** Acetoacetate and beta-hydroxy butyrate are acids. When they accumulate, metabolic acidosis results and there will be increased **anion gap.**

**ii. Reduced buffers:** The plasma bicarbonate is used up for buffering of these acids.

**iii. Kussmaul's respiration:** Patients will have typical acidotic breathing due to compensatory hyperventilation.

**iv. Smell of acetone** in patient's breath.

**v. Osmotic diuresis** induced by ketonuria may lead to dehydration.

**vi. Sodium loss:** The ketone bodies are excreted in urine as their sodium salt, leading to loss of cations from the body.

**vii. High potassium:** Due to lowered uptake of potassium by cells in the absence of insulin.

**viii. Dehydration:** The sodium loss further aggravates the dehydration.

**ix. Coma:** Hypokalemia, dehydration and acidosis contribute to the lethal effect of ketosis.

**3. Write concisely on the management of ketoacidosis.**

* Ketoacidosis is a condition which arises due to the over production of ketone bodies (acetoacetate and B-hydroxybutyrate) and it can be managed as follows;
* **Fluid replacement.** Someone suffering from ketoacidosis will receive fluids either by mouth or through a vein (intravenously) until they are rehydrated. The fluids will replace those they have lost through excessive urination, as well as help dilute the excess sugar in your blood.
* **Electrolyte replacement.** Electrolytes are minerals in the blood that carry an electric charge, such as sodium, potassium and chloride. The absence of insulin can lower the level of several electrolytes in the blood. A person suffering from ketoacidosis will eceive electrolytes intravenously to help keep their heart, muscles and nerve cells functioning normally.
* **Insulin therapy.** Insulin reverses the processes that cause diabetic ketoacidosis. In addition to fluids and electrolytes, the patient will receive insulin therapy usually through a vein. When your blood sugar level falls to about 200 mg/dL (11.1 mmol/L) and your blood is no longer acidic, the individual may be able to stop intravenous insulin therapy and resume normal subcutaneous insulin therapy.