**ABDULRAZZAQ HINDU MA’AJI**

**17/MHS01/004**

**MBBS 300LEVEL**

**BIOCHEMISTRY ASSIGNMENT**

1. Ketogenesis: is the metabolic breakdown of fatty acids to produce ketone bodies, which provide an alternative form of energy for the body. The body constantly produce small amounts of ketone bodies that can make 22 ATP each in normal circumstances, and it is regulated mainly by insulin. Ketogenesis produces acetone, acetoacetate and beta-hydroxybutyrate molecule by breaking down fatty acids. These ketones are water soluble so they don’t need lipoproteins for transport. In times of fasting, even overnight while sleeping, the amount of ketone bodies in the blood increases. Ketogenesis occurs primarily in the mitochondria of liver cells. Ketogenesis can be regulated by hormones such as glucagon, cortisol, thyroid hormones and cetecholamines by causing greater breakdown of free fatty acids, thus increasing the amount available to be used in the ketogenic pathway.
2. Ketonaemia: this is a condition marked by an abnormal increase of ketone bodies in the circulating blood. Normally, when blood glucose decreases for more than a couple of hours, ketonaemia develops as a result of decreased insulin.
3. Ketonuria: this is characterized by increased ketone levels in urine. This is most common in individuals with diabetes, particularly type I diabetes mellitus. Also seen in pregnant women. Causes can be ketogenic diet, low insulin levels, starvation, illness or infection and drinking excess alcohol.

Consequences of ketosis

1. At the first stage they are often referred to as keto-flu these include headaches, fatigue, brain fog, increased hunger, poor sleep, nausea and decreased physical performance. The keto-flu is usually over in a short amount of time.
2. Blood acetone levels are elevated in ketosis, and the body gets rid of some via breath.
3. Ketosis causes reduction in water weight which can lead to leg cramps if loss of minerals is involved.
4. Dietary changes can sometimes lead to digestive issues, constipation is a common side effect in the beginning. Diarrhea may also occur in some people.
5. Increased heart rate is seen in some people.
6. Less common side effects include issues for breastfeeding women, kidney stones in epileptic children and raised cholesterol levels.

Management of ketosis

Fluid replacement: this is used to rehydrate the body and dilute the blood.

Electrolyte replacement: it helps maintain heart, muscle and nerve function. Levels in the blood often drop in the absence of insulin

Insulin therapy, balanced diet and exercise can help.