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**300 LEVEL**

1. **Define the following terms :**
2. **KETOGENESIS:**

Ketogenesis is the biochemical process through which organisms produce ketone bodies through breakdown of fatty acids and ketogenic amino acids. This process supplies energy under circumstances such as fasting or caloric restriction to certain organs, particularly the brain, heart and skeletal muscle.

1. **KETOANAEMIA:**

The presence of recognizable concentrations of ketone bodies in the plasma

1. **KETONURIA:**

Ketonuria is a medical condition in which [ketone bodies](https://en.wikipedia.org/wiki/Ketone_bodies) are present in the [urine](https://en.wikipedia.org/wiki/Urine). It is seen in conditions in which the body produces excess ketones as an indication that it is using an alternative source of energy. It is seen during starvation or more commonly in [type 1 diabetes mellitus](https://en.wikipedia.org/wiki/Diabetes_mellitus_type_1). Production of ketone bodies is a normal response to a shortage of [glucose](https://en.wikipedia.org/wiki/Glucose), meant to provide an alternate source of fuel from [fatty acids](https://en.wikipedia.org/wiki/Fatty_acids).

1. **Consequences of Ketosis**

Ketosis is a natural part of metabolism. It happens either when carbohydrate intake is very low (such as on ketogenic diet), or when you haven't eaten for a long time. Both of these lead to reduced insulin levels, which causes a lot of fat to be released from your fat cells. When this happens, the liver gets flooded with fat, which turns a large part of it into ketones. During ketosis, many parts of your body are burning ketones for energy instead of carbs. This includes a large part of the brain. However, this doesn't happen instantly. It takes your body and brain some time to "adapt" to burning fat and ketones instead of carbs. During this adaptation phase, you may experience some temporary side effects. These are generally referred to as the "low-carb flu" or "keto flu."

These may include:

* Headache.
* Fatigue.
* Brain fog.
* Increased hunger.
* Poor sleep.
* Nausea.
* Decreased physical performance

Some people also experience increased heart rate as a side effect of ketosis.

This is also called heart palpitations or a racing heart, and can happen during the first few weeks of a ketogenic diet. Being dehydrated is a common cause, as well as low [salt intake](https://www.healthline.com/nutrition/salt-good-or-bad/). Drinking a lot of [coffee](https://www.healthline.com/nutrition/top-13-evidence-based-health-benefits-of-coffee/) might also contribute to this.

Ketosis may also cause leg cramps, digestive problems and bad breath. Some other side effects are ketoacidosis, raised cholesterol levels and kidney stones.

1. **Management of Ketoacidosis**

Ketoacidosis is a pathological state of uncontrolled production of ketones that results in a metabolic acidosis. Ketoacidosis is most commonly caused by a deficiency of insulin in type 1 diabetes or late stage type 2 diabetes but can also be the result of chronic heavy alcohol use, salicylate poisoning, or isopropyl alcohol ingestion. If the doctor suspects diabetic ketoacidosis, he or she will do a physical exam and various blood tests. In some cases, additional tests may be needed to help determine what triggered the diabetic ketoacidosis. Blood tests may be carried out. Blood tests used in the diagnosis of diabetic ketoacidosis will measure:

* **Blood sugar level.** If there isn't enough insulin in your body to allow sugar to enter your cells, your blood sugar level will rise (hyperglycemia). As your body breaks down fat and protein for energy, your blood sugar level will continue to rise.
* **Ketone level.** When your body breaks down fat and protein for energy, acids known as ketones enter your bloodstream.
* **Blood acidity.** If you have excess ketones in your blood, your blood will become acidic (acidosis). This can alter the normal function of organs throughout your body.

The doctor may order tests to identify underlying health problems that might have contributed to diabetic ketoacidosis and to check for complications. Tests might include:

* Blood electrolyte tests
* Urinalysis
* Chest X-ray
* A recording of the electrical activity of the heart (electrocardiogram)

**TREATMENT**

Treatment usually involves:

* **Fluid replacement.** You'll receive fluids — either by mouth or through a vein (intravenously) — until you're rehydrated. The fluids will replace those you've lost through excessive urination, as well as help dilute the excess sugar in your blood.
* **Electrolyte replacement.** Electrolytes are minerals in your blood that carry an electric charge, such as sodium, potassium and chloride. The absence of insulin can lower the level of several electrolytes in your blood. You'll receive electrolytes through a vein to help keep your heart, muscles and nerve cells functioning normally.
* **Insulin therapy.** Insulin reverses the processes that cause diabetic ketoacidosis. In addition to fluids and electrolytes, you'll 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, you may be able to stop intravenous insulin therapy and resume your normal subcutaneous insulin therapy.