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DEPARTMENT: MEDICINE AND SURGERY

BIOCHEMISTRY ASSIGNMENT

**Assignment Title:** DIABETES, OBESITY AND CANCER
**Course Title:** Medical Biochemistry IV
**Course Code:** BCH 313

**Question**

GROUP 2 CATEGORY (MBBS)

1.DEFINE THE FOLLOWING TERMS

A. KETOGENESIS

B. KETONAEMIA

C. KETONURIA

D. KETOGENESIS

2. WHAT ARE THE CONSEQUENCES OF KETOSIS

3. WRITE CONCISELY ON THE MANAGEMENT OF KETOACIDOSIS

ANSWERS

a) KETOGENESIS;

 Ketogenesis is a biochemical process that produces ketone bodies by breaking down fatty acids and ketogenic amino acids. It is the release of [ketones](https://www.wisegeek.com/what-are-ketones.htm) into the body when fat is broken down for energy. When carbohydrate stores are exhausted, cells turn to fat cells for fuel. These fat cells break down and release energy, and ketones are the by-product of that breakdown.The process supplies the needed energy of certain organs, especially the brain.

Not having enough ketogenesis could result to hypoglycaemia and over production of ketone bodies leading to a condition called ketoacidosis.

b) KETONAEMIA

 a condition marked by an abnormal increase of [ketone bodies](https://www.merriam-webster.com/dictionary/ketone%20body) in the circulating blood

c) KETONURIA

 the excretion of abnormally large amounts of ketone bodies in the urine, characteristic of diabetes mellitus, starvation, or other medical conditions occurring as a result of increased metabolism of fats rather than carbohydrates

2) CONSEQUENCES OF KETOSIS

 Ketosis is a metabolic state characterized by elevated levels of ketone bodies in the blood or urine. Physiologic ketosis is a normal response to low glucose availability, such as low-carbohydrate diets or fasting, that provides an additional energy source for the brain in the form of ketones

The consequences/effects of ketosis include:

1. The "keto flu"

 a doctor of natural medicine and clinical nutritionist, estimates that about 25% of people who try a keto diet experience these symptoms; headache, nausea, fatigue, dry mouth, bad breath, upset stomach, nausea, frequent urination, and lack of mental clarity ( with fatigue being the most common).It happens because your body runs out of sugar to burn for energy, and it has to start using fat. That transition alone is enough to make your body feel tired for a few days.You may be able to minimize the effects of keto flu by drinking plenty of water and getting plenty of sleep

2. Diarrhea

 This may be due to the gallbladder the organ that produces bile to help break down fat in the diet.

Diarrhea can also be due to a lack of fiber in the keto diet and doesn’t supplement with other fiber-rich foods, like vegetables. It can also be caused by an intolerance to dairy or artificial sweeteners things you might be eating more of since switching to a high-fat, low-carb lifestyle.

3. Reduced athletic performance

 Some athletes swear by the ketogenic diet, not just for weight loss but for improved performance in their sport.It is discovered that participants performed worse on high-intensity cycling and running tasks after four days on a ketogenic diet, compared to those who’d spent four days on a high-carb diet. The body is in a more acidic state when it’s in ketosis, which may limit its ability to perform at peak levels.

4. Ketoacidosis

 People with type 1 or type 2 diabetes shouldn’t follow the keto diet unless you have your doctor’s permission and close supervision. Ketosis can actually be helpful for people who have hyperglycemia issues, but you have to be very mindful of your blood sugar and check your glucose levels several times a day.

That’s because, for people with diabetes, ketosis can trigger a dangerous condition called [ketoacidosis](https://www.health.com/type-1-diabetes/diabetic-ketoacidosis-causes-symptoms-treatments-diet). This occurs when the body stores up too many ketones acids produced as a byproduct of burning fat—and the blood becomes too acidic, which can damage the liver, kidneys, and brain. Left untreated, it can be fatal.

Symptoms of ketoacidosis include a dry mouth, frequent urination, nausea, [bad breath](https://www.health.com/weight-loss/keto-breath), and breathing difficulties

5. Weight regain

 Most people will regain a lot of the weight they lost as soon as they go back on carbs.

6. Less muscle mass, decreased metabolism

 Another consequence of keto-related weight changes can be a loss of muscle mass, says especially if you’re eating much more fat than protein. “You’ll lose weight, but it might actually be a lot of muscle and because muscle burns more calories than fat, that will affect your metabolism.”

Instead of regaining lean muscle, you’re likely to regain fat .That can have lasting effects on your resting metabolic rate, and on your weight long-term.

7. Increased risk of heart disease and diabetes

 Keto diet includes lots of vegetables and lean sources of animal protein. In other words, it’s not an excuse to eat butter and bacon although some people may try to do just that.

Doctors say that high-fat diets like this one may raise cholesterol levels, and some studies suggest that they increase the risk of [diabetes](https://www.eurekalert.org/pub_releases/2018-08/tps-kdm080718.php). Some have even called it a “cardiologist’s nightmare.”

People on the lowest-carb diets had the highest risk of dying from cancer, cardiovascular conditions, and all other causes. people who followed diets that were low in carbs and high in animal proteins (typical of the keto diet) had a higher risk of early death compared to those who consumed carbs in moderation.

3) THE MANAGEMENT OF KETOACIDOSIS

 Good blood glucose control and always taking your diabetes medications and insulin is the best way to keep blood glucose levels low enough to avoid DKA.

In the hospital you'll get [insulin](https://www.webmd.com/diabetes/treat-your-diabetes-17/slideshow-blood-sugar-insulin) through an IV to bring your ketones down and fluids to get you hydrated and bring your blood chemistry back into balance. If you don't treat ketoacidosis, you could pass out, go into a [coma](https://www.webmd.com/brain/coma-types-causes-treatments-prognosis), and possibly die.

Your doctor may change your [insulin](https://www.webmd.com/diabetes/video/myths-and-facts-about-insulin) dose, or the kind you use, to prevent it from happening again. You should drink more water and sugar-free, non-[alcoholic](https://www.webmd.com/mental-health/addiction/understanding-alcohol-abuse-basics) beverages.

Good blood sugar control will help you avoid ketoacidosis.

* Take your medicines as directed.
* Follow your meal plan closely.
* Keep up with your [exercise program](https://www.webmd.com/fitness-exercise/default.htm).
* Test your blood sugar regularly.

Make sure your insulin hasn't expired. Don't use it if it has clumps. Insulin should either be clear or evenly cloudy with small flecks.

If you're on an [insulin pump](https://www.webmd.com/diabetes/insulin-pump), look closely for insulin leaks, and check your tube connections for air bubbles.

Talk to your doctor if your blood sugar levels are often out of your target range.