

# Glucose, Glucose

This parody (written by Greg Crowther) is sung to the tune of **Sugar, Sugar** (written by **Jeff Barry** and **Andy Kim** and performed by **The Archies**).

## Lyrics

Glucose -- ah, sugar sugar --  
You are my favorite fuel  
From the blood-borne substrate pool.  
Glucose -- monosaccharide sugar --  
You're sweeter than a woman's kiss'  
Cause I need you for glycolysis.

I just can't believe the way my muscles take you in.  
(For you, they'll open the door.)  
All it takes is a little bit of insulin  
(To upregulate GLUT4).

Ah, glucose -- ah, sugar sugar --  
You help me make ATP  
When my predators are chasing me.  
Ah, glucose -- you're an aldehyde sugar,  
And you're sweeter than a woman's kiss'  
Cause I need you for glycolysis.

I just can't believe the way my muscles break you down.  
(My glycogen is almost gone.)  
A few more seconds and I'll be rigor mortis-bound.  
(Acidosis done me wrong.)

Your sweet is turning sour, baby.  
I'm losing all my power, baby.  
*I'm gonna make your muscles ache.*  
No, no, no!  
I'm swimming in lactate, baby.  
Yes, I'm swimming in lactate, baby.  
Now I'm drowning in lactate, baby.  
*I'm gonna make your muscles ache.*

No, no, no!  
I'm drowning in lactate, baby.

Ah, glucose -- ah, sugar sugar --  
I used you up and you left me flat;  
Now I'll have to get my kicks from fat.  
Oh, glucose, glucose, sugar, sugar,  
The honeymoon is over now.

### Comments

Glucose is a six-carbon sugar represented by the formula  $C_6H_{12}O_6$ . Glucose is vital to the functioning of many of the body's cells, including muscle cells, because it yields energy in the form of ATP when it is broken down. Through a series of reactions known collectively as glycolysis, glucose is converted to a three-carbon molecule known as pyruvate. The pyruvate can then be further processed by the mitochondria to produce carbon dioxide and water.

If pyruvate is being formed faster than it is being utilized, three-carbon molecules accumulate in the form of lactic acid (lactate). A buildup of lactic acid due to "excessive" glucose breakdown is thought to impair exercise performance. In addition, a lack of glycogen (the storage form of glucose) is also thought to cause fatigue under some circumstances. Thus, many athletes have what might be termed a "love-hate relationship" with glucose: they need it to fuel their muscles during exercise, yet burning it at high rates can get them into trouble. This song probes the nature of this relationship and includes a cameo appearance by the lactate molecule itself, which sings the line, "I'm gonna make your muscles ache," shown in italics. (This line is an allusion to the now-discredited theory that lactic acid causes muscle soreness.)

Jargon advisory: **GLUT4** is a glucose transporter in muscle cells (among others) that increases glucose uptake by these cells in response to insulin secretion by the pancreas.