PAU01

Dolphins Turn Diabetes Off and On -- Hope for Humans?

Bottlenose dolphins have what could be called type 2 diabetes, but unlike humans, the animals are able to turn it off and on—perhaps an evolutionary adaptation to maintain their big brains, new research suggests. Diabetes may have arisen in Ice Age humans for similar reasons, so the newfound dolphin on-off switch may be a key to curing type 2 diabetes in people.
Like humans, dolphins have relatively large brains compared to their body sizes—in fact, dolphins are second only to humans in the ratio between body and brain size.
Scientists know that humans need plenty of a sugar called glucose to keep their brains functioning. Some researchers think the same might be true for dolphins, since both species send high amounts of glucose through their bloodstreams.
Dolphins, however, primarily eat fish, which are high in protein and low in sugar. To get enough glucose from this diet, dolphins have evolved a mostly harmless form of insulin resistance.
Insulin is a hormone that helps the body turn blood sugar into energy. People with type 2 diabetes either don't make enough insulin or are resistant to its effects. Without insulin to break down glucose, too much sugar builds up in the blood, leading to complications such as glaucoma, nerve damage, arterial disease, and kidney failure.
But unlike people, dolphins can activate their diabetes only when the animals need it—and without the serious side effects. Dolphin diabetes turns on during their short overnight fast and turns off when they have breakfast in the morning.
Not all experts, however, are convinced that dolphins use blood sugar in the same ways that humans do. Even though both species are mammals, dolphins and people have very different metabolisms.

1. Comprehension exercises (2 points)

1.a. According to the text (0.5 points)

a. Without insulin you can suffer from kidney failure.
b. Insulin seldom helps the body change sugar into energy.
c. Dolphins diet is rich enough in glucose.

1.b. According to the text (0.5 points)

a. Dolphins can control their body and brain size ratio.
b. Humans have the largest brains compared to their body sizes.
c. Dolphins are unable to turn type 2 diabetes on and off.

1.c. Although dolphins and humans have different metabolisms they use blood sugar in the same way as we do.
(Answer 'True' or 'False' AND write the sentence supporting this idea) (0.5 points)

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1.d. Dolphin diabetes switches off during the night and on in the morning.
(Answer 'True' or 'False' AND write the sentence supporting this idea) (0.5 points)

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2. Do the following grammar exercises according to the instructions given (2 points)

2.a. Complete the second sentence so that it has a similar meaning to the first one (0.5 points):

- I regret to have missed my train.

- I wish

2.b. Turn the two sentences into a conditional clause (0.5 points)

- We didn't arrive on time. There was a transport strike

- If there

2.c. Turn the two sentences into a relative clause (0.5 points)

- I have a friend. His name is Paul.

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2.d. Write the appropriate verb form of the verb in brackets (0.5 points)

- We needn't (to have) a passport if we travel around Spain. Your ID is enough.

3. Identify ONLY FOUR words from their definitions (1 point)

- not able or not likely to cause any hurt or damage.

- started to happen.

- the relationship between two things expressed in numbers to show how much bigger one is than the other.

- completely certain about something.

- one of the two organs in your body which remove waste from the blood and produce urine.

- one of the meals of the day.

4. Write a summary of the text of about 30 – 45 words using your own words (2 points)

5. Write a composition of about 100 – 150 words on ONLY ONE of the following topics (3 points)

5.a. Could we learn from animal behaviour?

5.b. Advantages and disadvantages of practicing sports activities.