InkBiology

QUESTION WORKBOOK

Blood glucose: two hormones, one liver, and two different diabetes

Hormonal communication, plant responses and homeostasis · Unit B15

AQA 3.6.4.2 · OCR A 5.1.4 · Edexcel A Topic 7 (homeostasis) · CAIE 14.1

6 questions · 24 marks

NAVY SCREEN EDITION

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SECTION B · Standard, 3 to 5 marks

B1 Describe how a rise in blood glucose concentration causes a beta cell in an islet of Langerhans to secrete insulin. [5]

B2 Explain how insulin lowers the concentration of glucose in the blood, making clear why it is wrong to say that insulin converts glucose into glycogen. [4]

B3 Compare type 1 diabetes with type 2 diabetes, referring to the cause of each, the insulin present in the blood and how each is usually managed. [4]

B4 In a glucose tolerance test a person's blood glucose concentration is 5.6 mmol per dm3 when fasting, rises to 9.8 mmol per dm3 at 30 minutes, and has returned to 5.6 mmol per dm3 at 120 minutes. Calculate the percentage increase in concentration between fasting and 30 minutes, and calculate the mean rate of fall between 30 and 120 minutes. [4]

B5 Insulin has to be injected rather than swallowed. Suggest why, and suggest why a person with type 2 diabetes can often control their blood glucose by diet and exercise alone while a person with type 1 cannot. [4]

B6 Name the cells that secrete insulin and the cells that secrete glucagon, and name the patches of tissue in the pancreas that contain both kinds of cell. [3]