LETTERS TO THE EDITOR

Calculation of the Assimilation Konstant of Glucose- K_G

Dear Sir:

Many authors utilize for the calculation of the konstant of glucose assimilation not the glucose excess, $K_{G-exc.}$, but the absolute values of glycemia, $K_{G-abs.}$, or the formula for the halftime of glucose disappearance from the blood, $K_{G-1/2t} = 0.69/t_{1/2}$.

alloxanized and subtotaly pancreatectomized rats and only i.v. or peroral GTT disclose the difference in their glucose assimilation, expressed by K_G .

Calculation of K_G from excess of glucose is also less dependent upon the method used for glucose determination and factors influencing it.

Table 1. K_G — *Konstant of glucose assimilation* calculated from 1. Glucose excess — $K_{G-exc.}$ 2. Absolute value of glycemia — $K_{G-abs.}$ 3. Decrease in glycemia to half of its initial value — $K_{G-1/2t}$

Non-diabetic:

Minutes: 0 10 60
Glycemia: 90 200 100

$$K_{G-exc.} = 2.3 \frac{\log 110 - \log 10}{60 - 10} \cdot 100 = 2.3 \frac{2.04 - 1.0}{50} \cdot 100 = 4.8$$

$$K_{G-abs.} = 2.3 \frac{\log 200 - \log 100}{60 - 10} \cdot 100 = 2.3 \frac{2.3 - 2.0}{50} \cdot 100 = 1.38$$

$$K_{G-1/2t} = \frac{0.69}{60 - 10} \cdot 100 = 1.38$$

Mild diabetes:

Minutes: 0 10 60
Glycemia: 100 300 150

$$K_{G-exc.} = 2.3 \frac{\log 200 - \log 50}{60 - 10} \cdot 100 = 2.3 \frac{2.3 - 1.7}{50} \cdot 100 = 2.76$$

$$K_{G-abs.} = 2.3 \frac{\log 300 - \log 150}{60 - 10} \cdot 100 = 2.3 \frac{2.5 - 2.2}{50} \cdot 100 = 1.38$$

$$K_{G-1/2t} = \frac{0.69}{60 - 10} \cdot 100 = 1.38$$

Moderate diabetes:

Minutes: 0 10 60
Glycemia: 100 400 200

$$K_{G-exc.} = 2.3 \frac{\log 300 - \log 100}{60 - 10} \cdot 100 = 2.3 \frac{2.5 - 2.0}{50} \cdot 100 = 2.3$$

$$K_{G-abs.} = 2.3 \frac{\log 400 - \log 200}{60 - 10} \cdot 100 = 2.3 \frac{2.6 - 2.3}{50} \cdot 100 = 1.38$$

$$K_{G-1/2t} = \frac{0.69}{60 - 10} \cdot 100 = 1.38$$

One can show, however, (see Table 1), that for three different states with glycemia at 0 and 10 and 60 min after intravenous glucose (e.g. 90, 200, 100 mg of glucose/100 ml in normals, 100, 300, 150 in mild diabetes and 100, 400, 200 in moderate diabetes) K_G calculated from absolute values of glycemia, $K_{G-abs.}$, or from half-time of decrease in glycemia, $K_{G-1/2t}$, are identical (1.38) and misleading and only K_G calculated from glucoses excess gives appropriate and differentiating values: 4.8 for normals, 2.76 for mild diabetes and 2.3 for moderate diabetes.

Such cases of mild and moderate diabetes with glycemia below 100 mg/100 ml after 24 h of fasting exist in

Conclusion: When glucose assimilation expressed by K_G is used for classification of diabetes, not absolute values or half time of decrease in glycemia, but glucose excess values should be used for calculation of K_G .

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