IMPACT OF BODY MASS INDEX (BMI) ON GLYCEMIC RESPONSE

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Background and Aims

Increment of Plasma Glucose (PG) concentration depends on glucose load. The impact of the subjects' Body Mass Index (BMI) remains to be established.

The purpose of this prospective study was:

To identify a possible correlation between BMI and the increment of PG concentration in 10-20-30-40-50-60-minute intervals between the ingestion of 15g and 40g of glucose-fructose-saccharose jelly and the time of Capillary Plasma Glucose (cPG) estimation on Glucometer Strips System (GSS).

Methods

Healthy volunteers (N=10, aged 19-34 years, BMI 18.0-31.0 kg/m^2) were recruited. Two fasting glycemic tests (one with ingestion of 15g jelly and one with ingestion of 40g jelly) were conducted using the GSS Newton for PG estimations in each of the volunteers. IBM SPSS Statistics for Windows, V.23.0, was applied.

Fig. 1: 15g & 40g glucose shots

Results

Spearman analysis revealed that there was a significant mean strength correlation between BMI and increment of PG concentration as late as 40 and 50 minutes after ingestion of 40g jelly (Fig. 2, Fig. 3). There was no significant correlation found after ingestion of 15g jelly.

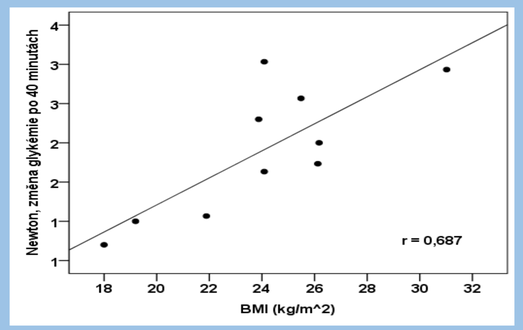

Fig. 2: Correlation between PG increment x BMI after 40 min

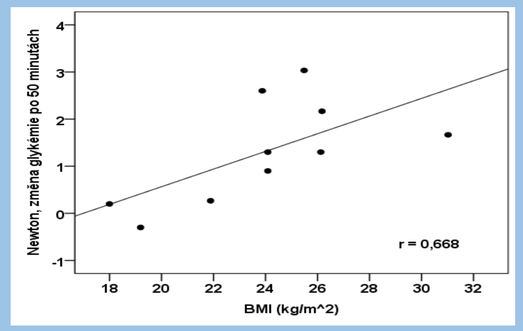

Fig. 3: Correlation between PG increment x BMI after 50 min

Conclusions

Spearman's correlation analysis showed a significant correlation between BMI and the change in PG levels after 40-50 minutes of consuming 40g (but not 15g) of glucose-fructose-saccharose jelly with the Newton (40-50 minutes) glucometers (Table 1). Therefore, BMI may influence the jelly absorption rates which in turn may influence the PG concentration levels.

NEWTON, 40 g Glucose		ΔNew time10-0	ΔNew time20-0	ΔNew time30-0	ΔNew time40-0	ΔNew time50-0	ΔNew time60-0
BMI (kg/m^2)	Correlation Coefficient	-0,018	-0,085	-0,079	0,687	0,668	0,389
	p-value	0,960	0,815	0,828	0,026	0,035	0,266

Table 1: Newton Correlation Coefficient after 40g jelly (40 & 50 minutes significant Δ)

Acknowledgements

We would like to thank the Faculty of Medicine and Dentistry & Teaching Hospital Olomouc, especially the Departments of Physiology, Biophysics & IInd Dept. of Medicine for their support. We would also like to thank our colleagues, volunteers & supervisor.

Presented at the 56th SVOČ Conference at the Faulty of Medicine & Dentistry, Olomouc, Czech Republic, April 30th, 2024