BASAL METABOLISM DETERMINED BY DIFFERENT METHODS IN SELECTED PART OF WOMEN POPULATION

Katarína Fatrcová-Šramková[1*], Tünde Juríková[2], Marianna Schwarzová[1], Marcela Capcarová[3]

[1]Department of Human Nutrition, Faculty of Agrobiology and Food Resources, Slovak University of Agriculture in Nitra, Tr. A. Hlinku 2, 94976 Nitra, Slovak Republic
[2]Institute for Teacher Training, Faculty of Central European Studies, Constantine the Philosopher University in Nitra, Dražovská 4, 94974 Nitra, Slovak Republic
[3]Department of Animal Physiology, Faculty of Biotechnology and Food Sciences, Slovak University of Agriculture in Nitra, Tr. A. Hlinku 2, 94976 Nitra, Slovak Republic

[*]e-mail: katarina.sramkova@uniag.sk

Abstract

Basal energy is responsible for the basic vital functions of organism. The aim of the work was to evaluate the basal energy expenditure among adult women with application of various methods and especially in relation to the body composition and body fat content.

Basal metabolism was determined in the set of 118 women aged 21.9 ± 0.9 years (from 20 to 25 years). 10 methods for determination of basal energy expenditure were utilized. Harris-Benedict equations (method A) were determined as comparative method. The next 8 methods (methods B - I) were based on application of calculations, table values and nomograms. The final 10th method (method J) utilizes predictive equations according to Brozek and Grande concurrently with detection of body composition and body fat content (%) by Bodystat Quadscan 4000 (Bodystat Ltd, Doubles, Isle of Man, UK). For statistical evaluation we used one-way ANOVA test and statistical software Statistica 10.0 (StatSoft Inc., USA). Pearson correlation coefficient was used to determine correlations between the methods.

We found out the differences in values of basal metabolism determined by different methods. Basal metabolism determined by method A represented in the set of women 6041.69 ± 441.44 kJ/24h. The lowest value was achieved by method F based on Owen's equations (5160.04 ± 292.4 kJ/24h) taken into account gender and weight. On the contrary, the highest value was noticed by method E (6565.80 ± 775.63 kJ/24 h) from calculations on the basis of Kleiber equations taken into account three parameters - gender, weight and height. Basal metabolism values from method F were significantly ($p < 0.001$) different from all other methods. In term of evaluation of basal metabolism in relation to anthropometric parameters and body composition we found out higher values of basal metabolism as well as body fat content, body mass index and waist to height ratio (which represent higher health risk) within evaluated methods A and J.

The achieved knowledges can be utilized in the praxis and make provision for selection of proper method for determination of basal energy expenditure.

Key words: *Basal metabolism, Energy expenditure, Energy need, Body composition, Body fat, Body mass index, Women.*