UNIVERZITA KARLOVA
FARMACEUTICKÁ FAKULTA V HRADCI KRÁLOVÉ
KATEDRA BIOLOGICKÝCH A LÉKAŘSKÝCH VĚD

DIPLOMOVÁ PRÁCE

Hodnocení predikce tělesné kompozice měřené duální bioimpedancí ve srovnání s bioimpedanční spektroskopií

Natálie Žídková

Vedoucí diplomové práce: doc. PharmDr. Miloslav Hronek, Ph.D.

HRADEC KRÁLOVÉ, 2022/2023

ABSTRACT

The aim of this work was to evaluate the prediction of body composition by the method of dual bioimpedance analysis in relation to the prediction of body composition by the method of spectroscopic bioimpedance analysis.

Five pregnant women (first-time mothers) with a physiologically ongoing pregnancy were included in the study. Each of them participated in three examinations, specifically in the period between 17.-27. week of pregnancy, 28.-35. week of pregnancy and the 36th-38th week of pregnancy.

A *Tanita RD-953* personal digital scale *(Tanita Corporation, Tokyo, Japan)* representing dual bioimpedance analysis and a BCM – *Body Composition Monitor (Fresenius Medical Care, Bad Homburg, Germany)* representing spectroscopic bioimpedance analysis were used for measurements. The measurement results were compared by statistical analysis.

No significant differences were found between the BIA and BIS measurements by the Wilcoxon test. In contrast, the Bland-Altman test found statistically significant differences in the measurement of body fat in the first and second follow-up periods, as well as in the measurement of net components in the first follow-up period. In the case of body fat prediction, two significant strong correlation statistics were found between the BIA and BIS methods in the first ($r = 1$; $p = 0.0167$) and third ($r = 0.9747$; $p = 0.0333$) observed periods.

The results show that the prediction of body composition by the method of dual bioimpedance analysis is sufficiently reliable compared to the prediction by the method of spectroscopic bioimpedance analysis in the case of total body water and can be used in any period of pregnancy. Measuring total body fat seems to be reasonably accurate between 36-38. week of pregnancy, in the case of a non-fat component in the period between 28.-35. and between 36.-38. week of pregnancy. However, these conclusions need to be verified by studies on a larger number of women.