CHARLES UNIVERSITY IN PRAGUE
FACULTY OF PHARMACY IN HRADEC KRALOVE
Department of Biological and Medical Sciences

Pharmacy

Review of diploma thesis

Student: **Aikaterini Koukou**

Mentor of the thesis: Doc. PharmDr. Miloslav Hronek, Ph.D.

Reviewer of the thesis: PharmDr. Miroslav Kovařík, Ph.D.

Year of the defence: 2015

Title of diploma thesis:
Human body composition during ontogenesis

Formal comments: number of pages: 56, number of graphs: 0, number of figures: 2,

number of tables: 0, number of references: 74

Type of work: Bibliographic search

a) Aim of the thesis is: Fulfilled

b) Language and graphic level: Very good

c) Processing of theory: Very good

d) Methods description: Not commented, no practical part in thesis

e) Results description: Not commented, no practical part in the thesis

f) Discussion and conlusions: Excellent

Reviewer comments:
This work concerning body composition is processed in depth, clearly and almost without typing errors. Parts of this work continues with logical continuity in generally (body composition, methods of its determination, its changes during ontogenesis and under pathological conditions). However some methods of body composition determination mentioned in the text (e.g. hydrodensitometry or air displacement plethysmography) are not described. There is missing mention of four-compartment model in chapter concerning body composition models, although its used is mentioned in chapter about body composition in pregnancy. There is also missing chapter about body composition in adults (body composition in adolescence is straight followed with middle age).
More frequent use of pictures or tables would bring higher work clearability for reader. In chapter about bioelectrical impedance analysis could be mentioned the bioimpedance vector analysis or phase angle determination.

There are present some formal deficiencies:
- some abbreviations are introduced repetitively (even twice on the same page) or are not always explained at first use
- list of abbreviations is not sorted alphabetically
- reference on figure 2 is missing in the text, the reference on figure 1 is present after the figure
- there is mentioned the work of Moore in text, but there is cited only the secondary source (Pietrobelli et al. 2000)
- some terms used are not explained (e.g. T and Z scores in chapter about osteoporosis)

There are present also some logical deficiencies:
- osteoclasts and osteoblasts participate in the formation and resorption of bone (page 11)
- multi-frequency bioimpedance method is not reproducible in frequencies over 200 kHz, while it is used in frequencies to 500 kHz (page 18)
- a great part of brain development is accomplished until the age of 2…contrariwise, the biggest part of the body is developed until the 2nd year (page 26)
- menstruation - normal blood flow present in women almost every 28 days during a reproductive cycle (page 27)
- the secretion of gonadotropins by hypothalamus (page 27)
- BMI - practical and useful tool for the assessment of body composition (page 29)

Questions:
1) Could you recommend any methods of body composition determination for use with advance in some particular phases of ontogenesis (e.g. in newborn, puberty or elderly)?

2) Were published some appropriate specific formulas developed for the assessment of body composition by the method of skinfold thicknesses in adolescents as you mentioned on page 29. Could you present some examples?

3) You state that magnetic resonance imaging permits the assessment of energy expenditure at chronic diseases. It is possible determine the whole-body energy expenditure by this method or are there any more convenient methods for this purpose?

Evaluation of diploma thesis: Very good, to defense: Recommended

In Hradec Kralove May 26, 2015 ……
Reviewer signature