Oral Presentations

O.K.1

Teaching of biochemistry for students of „Health and Physical Education” (how to attain it without the formulas of molecules ?!)

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Hereinafter I summarize my seven years old experience in teaching of biochemistry for students of 5 years long studies of “Health and Physical Education” teaching students to be teachers of physical education in different schools. Our main problems are the following: 1) too few hours of biochemistry (45 in all within three semesters of III and IV year) 2) just lectures (no laboratories whatsoever) 3) low level of students, background 4) inadequate programme of studies (lack of chemistry and biology ) 5) insufficient attention to biochemistry (no exam) 6) generally, the shortage of exercises, tests and exams on the education studies in Poland.

Nevertheless we are able to teach students understanding the main ideas and aspects of contemporary biochemistry. The keys to attain such a goal are as follows: 1)the precise programming, thus selection of data 2) adequate although extremely short introduction into general chemistry 3) passage of great part of data into the other related/special subjects e.g. a)all the molecular genetics-from DNA double helix to the chromosomes and cloning- into so called “Human biology” and b)almost all data on the biochemistry and physiology of muscles and nervous tissue including the bioenergetics, diet and supplementation into the special “monographic” lecture(s) 4) the suitable schemes and slides 5) the relevant system of examining i.e. tests with the bank of questions.

However, the most important factor consisted in an almost complete withdrawal the presentation and execution the formulas of molecules. We left just general formulas of α-L-aminoacids, planar peptide bond (so di- and tripeptides), fatty acids, triglycerides, nucleosides and nucleotides and the formulas of glycerol, palmitic acid, D-ribose, D-glucose, maltose, pyrimidine, purine, pyruvate, lactate, α-ketoglutarate, urea and vitamin PP. This does not make impossible to copy with the majority of details of structure of proteins, DNA, RNA, coenzymes,ATP, heme and so on. The crucial role of allosteric and hormonal regulation is emphasized. Neither the kinetic equations nor the enzyme classification are presented.

The students interested in biochemistry might carry out their masters degree thesis on the effects of everyday diet on the physical fitness and stress. Till now we got more than thirty such dissertations and PhD theses are in preparation. Mind you, the human body is the best biochemical laboratory ever. This might be the motive of interesting in learning biochemistry. Now, we are elaborating the details of the internet E-learning, including the laboratory(!),with testing of the acquired knowledge on line.

Session K. Didactics of the Biochemistry