МІНІСТЕРСТВО ОСВІТИ ТА НАУКИ УКРАЇНИ
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ
МЕДИЧНИЙ ІНСТИТУТ

ПЕРСПЕКТИВИ РОЗВИТКУ МЕДИЧНОЇ НАУКИ І ОСВІТИ

ЗБІРНИК ТЕЗ ДОПОВІДЕЙ
ВСЕУКРАЇНСЬКОЇ НАУКОВО-МЕТОДИЧНОЇ КОНФЕРЕНЦІЇ,
що присвячена 25-річчю Медичного інституту Сумського державного університету
(м. Суми, 16-17 листопада 2017 року)

Суми
Сумський державний університет
2017

рівень цих елементів зменшується відповідно на 8,97% (p=0,0009) та 6,73% (p=0,0010). Рівень кальцію знижується на 6,49% (p=0,0424), магнію – на 7,39% (p=0,0401), заліза – на 6,73% (p=0,0239) та цинку – на 6,95% (p=0,0339).

Висновки. Зменшення концентрації електролітів у серці на 1г маси є відносним і відбувається в результаті їх розведення по мірі зростання гідратації серця. Найшвидше зменшується вміст натрію, що є слідством первинності ураження позаклітинного водного сектору. Внаслідок зниження трансмембранного градієнту натрію спостерігається інтенсивне поглинання іонів кальцію серцевим м'язом та швидке втрачання іонів калію. Тому концентрація іонів кальцію в серці знижується непропорційно в порівнянні зі змінами вмісту іонів натрію та калію.

THE COMPOSITE MATERIALS BASED ON HYDROXYAPATITE AND GELATIN FOR BONE TISSUE APPLICATION

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Introduction. Recent research has focused on the composites based on gelatin and carbonate containing Hydroxyapatite (HA) due to the bioactivity and biocompatibility of these materials with bone tissue. HA (Ca10 (PO4)6(OH)2 has chemical and crystallographic similarity to the carbonated apatite in human bones and is widely used for bone surgery. Gelatin (Gel) contains peptides and proteins that are excellent biocompatible and biodegradable materials for bone tissue engineering applications. Whilst many studies have investigated large concentrations of HA–Gel composites using many traditional techniques, this study investigates a combination of low powered ultrasonic irradiation and low concentration of gelatin in the co-precipitation synthesis.

Material and methods. Samples was synthesized by ultrasonic dispersion HA and additives in Gel solution. There were HA/Gel – 8/2 components ratios of dry matter for experiment application. To evaluate the bone tissue response composite were implanted six months old rats. Composite were injecting in the sponge form. The morphology analysis of obtained composites was provided by scanning electron microscopy (REMMA-102, SELMI, Sumy, Ukraine), optical microscopy (Karl Zeiss Primo Star, Karl Zeiss Microimaging, GMBH, Germany) and digital camera (Canon PowerShot A1400).

Results. 21 days after postoperative composite were completely replaced by newly formed lamellar bone tissue. A distinctive characteristic of this tissue was mosaic coloring suggests that mineralization is irregularly distributed. Blood vessels are visualized into regeneration tissue as the osteogenic components source. New formed tissue characterized by high oteoblasts density, which indicates of remodeling activity. After the implantation of the composite materials to the 21 day there are no evidence of inflammation in the defect area and surrounding tissue. Furthermore biocomposite was completely degraded.

Conclusions. The formation of lamellar bone tissue demonstrates expressed reparative and osteoinegrative properties of composite materials.

EYE RETINAL CHANGES UNDER THE INFLUENCE OF CHROMIUM IONS

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Introduction. Relationships between human eyes and metal ions take multiple forms. Neurotoxicity manifests as peripheral neuropathy, sensorineural hearing loss; ocular toxicity is presented as visual impairment. Cr (VI) is very toxic. Cr (VI) have capable of causing DNA damage, chromosomal aberration, epigenetic changes and microsatellite instability. The goal of our research has influenced Cr (VI) on retina of rets.

Materials and Methods. 36 (72 eyes) male albino rats that weighed 300-325 g were evaluated for histologically. Scanning Electron Microscope (SEM). Briefly, 4 μm thick tissue sections were placed on graphite plates. Rats of experimental group – 18 (36 eyes) individuals entered potassium bichromate (Sigma, USA) into drinking water in a dose of 0,02 mol/l. The rats of control group (18 individuals) drank usual drinking water. On six animals from under skilled group brought out of experiment in 20, 40 and 60 days (first second and third group) after the beginning of introduction of bichromate of potassium.

Results. The average content of the micro- and macroelements under study are shown in Table 1. EDS analyses revealed that inorganic phases of retina were mainly composed of calcium and phosphorus as the major constituents with some minor components such as Cr, Ca, Fe, Mg, and K. The rets retina corresponding to Cr was higher. It can clearly be seen from Table 1 that Cr levels increased to a statistically significant extent. As for Mg and Ca levels, there was no remarkable difference between the normal retina. The lowest levels of Fe and K were observed in first group. SEM photos are showed on Fig 1.

Table 1. Average concentrations of microelement in group of rets

Microelements %	Control Group	First Group	Second Group	Third Group
Cr	-	0.1±0.03	0.23±0.08**	0.63 ± 0.11***
Ca	0.54 ± 0.05	0.59 ± 0.07	0.61 ± 0.1	0.56 ± 0.08
Fe	1.35±0.28	0.21±0.08***	1.21±0.12*	1.39±0.2
Mg	0.64 ±0.02	0.7 ±0.1	0.58 ±0.12	0.68 ±0.08
K	0.68 ±0.04	0.23±0.05**	0.35±0.08**	0.4±0.06***

* P < 0.05 ** P < 0.01 ***P < 0.001.