

Kletochnye mekhanizmy postnatal'nogo rosta pecheni krysa pri khronicheskom vozdeistvii sul'fata kadmiia i khlorida strontsiia.

[Cellular mechanisms of postnatal growth of rat liver in during chronic exposure of cadmium sulfate and strontium chloride].

Автор:Shalakhmetova, T M; Mamyrbayeva, Z Zh; Bersimbaev, R I; Shtein, G I; Kudriavtsev, B N

Тситологиия

Том:40

Выпуск:5

Стр.:417-31

Опубликовано:1998

Аннотация

A cytophotometric investigation was performed to study the ploidy level and total protein content in hepatocytes of rats of different ages (1, 7, 14, 21, 30, 90, 180, 365 days), both intact and chronically treated with cadmium sulfate or strontium chloride. It was established that during the first month of postnatal ontogenesis, compositions of liver parenchyma cell population of intact and treated rats did not differ. Compared to control animals, the process of cell polyploidization in the liver of rats treated with heavy metal salts of 30-90 days proceeded slower, especially in Cd(2+)-treated rats. Within 180-365 days the cell polyploidization in the treated animals increased. The proportion of (4c x 2)-hepatocytes in 1 year old Cd(2+)- or Sr(2+)-treated rats increased, resp., by 2.7 and 1.5 times, and that of 8c hepatocytes was higher by 3.9 and 1.5 times than in the control, the average ploidy level rising by 20 and 5%, respectively. It was established that until 90 days the rate of protein accumulation in liver cells of intoxicated rats was slower than in intact animals. Thus, the average protein content per diploid hepatocyte in Cd(2+)- or Sr(2+)-treated 30 day old rats was lower by 20 and 16%, respectively, compared to control animals. The protein content increased in liver cells of Cd(2+)- or Sr(2+)-intoxicated rats following 90 and 180 days, respectively, and this process was exclusively associated with cell polyploidization. During the first 3 weeks after birth, no significant difference was observed in the extent of involvement of cell proliferation, polyploidization and hypertrophy in the growth of liver in intact and intoxicated animals. At this period the liver was growing due completely to cell proliferation and hypertrophy. During 21-30 days the contribution of cell proliferation to the liver growth of intact rats was not significant (29%), whereas it remained at higher level (50%) in the treated animals. In 30-90 days after birth, the involvement of proliferation process to the liver growth of intoxicated rats decreased to 25-28%, while in intact animals it increased up to 37%. At this period the cell polyploidization plays an essential role in the growth of liver in both intact and intoxicated animals to reach in average 37-46%. The contribution of polyploidization and hypertrophy to the liver growth of Cd(2+)-treated rats within 30-90 days was obviously higher than in Sr(2+)-treated animals. Both at the late (3-12 months) and at the early (1-21 days) stages of experiments, the pattern of correlation of different cell components in the growing liver of intact and intoxicated rats differed only a little.

Информация об авторе

Адрес:Kazakh National University, Institute of General Genetics and Cytology, Academy of Sciences of Kazakh Republic, Almaty.

Категории/классификация

Направления исследования: Pharmacology & Pharmacy; Toxicology; Gastroenterology & Hepatology; Genetics & Heredity (предоставленные Thomson Reuters)

Термины MeSH:

Заголовок	Классификатор
Administration, Oral	
Animals	
Cadmium Compounds*poisoning	
Hypertrophy	
Liver	*drug effects growth & development pathology
*Ploidies	
Rats	
Strontium	*poisoning
Sulfates	*poisoning
Time Factors	

Химические:

Реестровый номер	Содержимое
0	Cadmium Compounds
0	Sulfates
947UNF3Z6O	cadmium sulfate
EKE8PS9J6Z	strontium chloride
YZS2RPE8LE	Strontium

Информация о документе

Тип документа: English Abstract; Journal Article

Язык: Russian

PubMed ID: 9695240

Уникальный идентификатор NLM: 0417363

Дата создания: 08 Sep 1998 Дата завершения: 08 Sep 1998 Дата проверки: 21 Nov 2013

Страна: RUSSIA

ISSN: 0041-3771

Другая информация

Подвыборка цитирования: Index Medicus

Состояние: MEDLINE