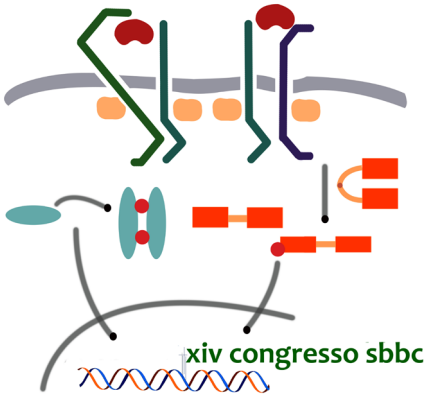

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fasting inhibits cell
proliferation in the gastric epithelium of young adult rats, whereas it is stimulatory in pups. Such opposite effects can be associated to the presence and availability of corticosterone and growth factors, but might be reflected in cell control. In the current study we aimed to evaluate the behavior of cell cycle proteins in the gastric mucosa of pups and young adult rats submitted to fasting. Wistar rats were fasted for different periods according to age. Cyclin D1, Cdk4, cyclin E, Cdk2, p27 and p21 were measured by Western blot in samples scraped from the gastric mucosa. We found that whereas Cdk 2 and Cdk4 remain constant, cyclins D and E are differently altered by the progress of fasting in pups and adult rats. Interestingly, we observed that p27, which can retard cell cycle as a CKI, increases significantly prior to the inhibition of cell proliferation in the adult mucosa, whereas it does not change for pups. We suggest that cyclins D and E and p27 are diversely affected by fasting in pups and adult rats and such differences might account for the opposite effects triggered by food restriction at distinct developmental stages. Supported by FAPESP, CNPq and CAPES.
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F-030
MATERNAL PROTEIN MALNUTRITION EFFECTS ON CELL PROLIFERATION AND GROWTH FACTORS EXPRESSION IN THE GASTROINTESTINAL EPITHELIUM OF SUCKLING RATS

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Maternal malnutrition during pregnancy and lactation causes significant changes in the gastrointestinal epithelium of the offspring. Data from our laboratory showed a decrease on metaphase indices of stomach and small intestine of undernourished suckling rats. The aim of this study is to check if protein restriction (8% protein) during pregnancy and lactation causes cell proliferation and growth factors expression changes in the gastrointestinal epithelium of 14 d-old suckling rats. Female Wistar rats received control (20%) or restricted (8%) protein diet
during all pregnancy and lactating period. Animals were sacrificed at 14 days. Stomachs and pieces of intestines were collected for cell proliferation and histological analyses. We analyzed intestine cell proliferation by means of metaphase and crypt fission indices. Immunoreaction for TGFbeta1 and 3 and TGFalpha was performed in the gastric tissue. Metaphase index of large intestine was not different between the groups, while crypt fission index of intestine was significantly reduced in the undernourished group. Immunohistochemistry analysis showed an increase in the number of TGFbeta1 positive cells and a decrease of TGFbeta3 positive cells in the gastric glands of undernourished rats, while there was no difference regarding TGFalpha analysis. As cell proliferation was decreased in intestine of undernourished rats we suggest that TGFbeta1 may be involved in the control of gastric cell proliferation, while TGFbeta3 may be related to differentiation events. The involvement of TGFalpha is unclear and more studies are needed.
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F-031
ANALYSIS OF CELLULAR BEHAVIOR IN CULTURE ON MULTI-WALLED CARBON NANOTUBE (MWCNT)

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The nanometric characteristics of carbon nanotubes (CNTs) are supposed to have mimetic properties of extra-cellular matrix and systematic in vitro and in vivo investigations using biologically compatible CNT are necessary. In this way, this work shows the behavior of cultivated mouse embryonic fibroblast cells with expression of green fluorescent protein (GFP) on aligned MWCNTs surface. The adherence, proliferation and cellular survival were observed by images of fluorescence and scanning electron microscopy (SEM). The fluorescent cells were used due to opacity of MWCNTs. Despite the results have showed adherence, survival and increasing of the number of the cells on MWCNTs at the first 48h, after 72—144h those cells started to die. Cell death did not happen when we increased the number of the seeded cells from 50000 to 100000. The biocompatibility of cell-to-MWCNTs showed to be dependent on number of cells adhered on MWCNTs surface. The structure of MWCNTs is hydrophobic which may induce weak adherence of cells in aqueous medium environment. Cell death in this condition may suggest anoikis. The fluorescence observation corroborates this assumption: the actin was not so straight and in some cases completely disrupted after intervals of 48h into cultivated cells.Although anoikis hypothesis might be better investigated using specific markers and overcoming the fixation of MWCNTs, we have showed that the biocompatibility to MWCNTs is possible and dependent of number of the cells. Further studies are necessary to better understand the interaction cell-CNTs using biomaterials.
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F-032
EVALUATION OF CYTOTOXICITY, CYTOCOMPATIBILITY AND CELL'S PROLIFERATION OF INTERACTION THE VERTICALLY ALIGNED MWCNT WITH HUMAN OSTEOBLASTS CELL'S

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The very important role of nanotechnology in the biological scene is becoming clear in the last few years with several papers studying the interaction of multi-

walled carbon nanotubes (MWCNT) with biological systems. CNTs are added to other biomaterials to obtain composites, and these CNT composites are proven to be suitable for cell growth and increasing enzyme activity. Although previous works have shown that CNTs are in principle ideal candidates for scaffolds/matrices in tissue engineering, it is still early to establish a general toxicological profile for this material and more systematic in vitro and in vivo investigations using biologically compatible CNT are necessary. The objective of this work was evaluated the cytotoxicity, cytocompatibility and proliferation of osteoblasts cell on vertically aligned MWCNT. The MWCNT films were obtained by microwave plasma process. The biocompatibility tests were performed on raw-MWCNT. The biocompatibility "in vitro" tests used were: 1) cytotoxicity, using MTT (cell viability) and LDH (cell proliferation) assays (3days) and cellular adhesion (7 days) by scanning electron microscopy (SEM). The results of high cell viability, possible cell's proliferation (>20%) and exceptional cell adhesion showed that the first cell monolayer spreads flat on the surface of the vertically aligned MWCNTs after 7 days. We present results of high viability, proliferation and exceptional cell adhesion on vertically aligned MWCNTs, indicating the possible application for preparation of scaffold/matrices in tissue engineering.
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F-033

HIGH-INTENSITY RESISTANCE TRAINING AND LOW PERIOD OF RECOVERY CAUSE MODULATION AND CROSS-SECTIONAL AREA REDUCTION IN RATS SKELETAL MUSCLE FIBERS

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Physical training can promote benefic adjustments in muscle fibers phenotype. However, high-intensity training associated with an insufficient period of recovery may lead to an "overtraining syndrome," which results in the fall of performance. We investigated the effects of the high-intensity resistance training with low period of recovery between sessions on the skeletal muscle morphology. Male Wistar rats (200-250g) were divided into four groups: trained 8 weeks(T8), control 8 weeks(C8), trained 12 weeks(T12) and control 12 weeks(C12). T8 and T12 underwent high-intensity resistance training (RT), with low period of recovery between sessions(5 days/ week). During the RT, animals realized jumps in a vat of water, with the overload adjusted by a vest coupled to the animal. At the end of RT, plantar muscle was withdrawn. Muscle fibers types were classified by using myofibrillar ATPase and the cross-sectional area(CSA) were measured using an image analyzer system. There was a decrease in CSA of muscle fiber IIC and IIAD in T8, and IIA and IID in T12 in relation to their respective controls. In T8, there was a reduction in IIA and IIBD and an increase in IIB fiber frequency, compared to C8. T12 showed an increase in IIBD and decreased IID fibers frequency, comparing with C12. In conclusion, our results show that RT with low period of recovery between sessions promoted CSA reduction in the skeletal muscle fibers and the modulation occurred in hybrid fibers predominantly.
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F-034

EFFECT OF A SHORT AND A LONG TERM OF FASTING ON THE CELL PROLIFERATION OF THE JEJUNAL EPITHELIUM OF RATS AT WEANING PHASE IN DIFFERENT PERIODS OF THE DAY

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Effects of a short (5.00 h) and a long term (25.00 h) of fasting on the metaphase index (MI) in the jejunal epithelium of young rats were investigated at 09.00 h, 15.00 h, 21.00 h and 02.00 h using the arrested metaphases method. Previous studies demonstrated that during the growth of small intestine there is a reduction in MI in the morning period. In the present study it was demonstrated that both 5h and 25 h of fasting reduced the MI in the morning period (09.00 h) and that 25h of fasting also reduced MI at 21:00h. It suggests that a short or a long term of fasting can accentuate the reduction of MI of intestinal epithelium at specific times of the day. Based on the results presented it can be concluded that food could be an important external factor regulating the cell proliferation during the growth of small intestine.
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F-035

THE PROLONGED EFFECT OF VINBLASTINE ON THE INCISOR RAT TOOTH ERUPTION

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The vinblastine drug reduces the eruption rate in incisor rodent tooth and there is not information about how long this reduced effect persists. Thus the aim of this study was to investigate the prolonged effect of vinblastine in a hipofunctional condition eruption. Rats were divided in a normofunctional vinblastine (group I); normofunctional control (group II); hypofunctional vinblastine (group III), and hypofunctional control (group IV). Groups I and II had their incisors teeth intact and a reference mark was made on the right tooth using a diamond high-speed rotating instrument and the groups III and IV had their left inferior incisors shortened at intergingival level by the same instrument each two days to produce the hypofunctional condition. Groups I and III received a single intraperitoneal vinblastine injection (2mg/Kg) while groups II and IV received a salina injection on the 8 day respectively. The eruption rates (mm) were measured by distances from the gingival margin to the marks done on the right teeth and up to the end of the left incisor teeth using a calibrated grid ocular under a microscope eyepiece at 10x magnification