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PROGRAM AND ABSTRACT BOOK

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.

Ilustração da Capa: Alexandre Takashi

NB.02 - Effective methodology for maintaining Toxoplasma gondii *in vitro* using paramagnetic iron nanoparticles to support three-dimensional cell culture

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Toxoplasma gondii is a protozoan parasite that infects approximately one billion people worldwide. Upon infection, the host may die due to latent infection or presence with chronic cysts in brain, retina or muscle tissue. Humans can become infected consuming water or foods contaminated with oocysts or eating undercooked meat. Its virulent form is difficult to replicate *in vitro*, requiring additional steps using experimental animals. The use of nanotechnology can contribute to this *in vitro* production, through the three-dimensional cultivation of mouse fibroblast cells (NIH/3T3 ATCC® CRL-1658™) and nanoparticles synthesized with radiation. The objective of this work was to demonstrate the three-dimensional culture of fibroblast cells aggregated to nanoparticles for inoculation the *T. gondii*. This methodology was created to facilitate parasite management and replication. For the production of nanoparticles, the work used concentrations of iron sulfate II heptahydrate ($Fe_2SO^4.7H_2O$, CAS 7782-63-0) and glycine (NH_2CH_2COOH, CAS 56-40-6) diluted in ultrapure water free of O_2 at pH 12. This solution was irradiated by electron beam of the IPEN / CNEN-SP Radiation Technology Center in doses of at least 15 and at most 30kGy. Paramagnetic iron oxide nanoparticles (PION's) were then adsorbed on cell membranes, and cells were kept together by a magnetic field. Structured spheroids (4 day of culture) were infected with 106 parasites (RH strain) and the infection was evaluated by transmission electron microscopy. Tachyzoites were found inside 3T3 cells, assuring that the spheroid can be a suitable culture substrate to *T. gondii in vitro* propagation. A three-dimensional methodology for *in vitro* cultivation of the parasite is perhaps the key for applications in the study of toxoplasmosis, as it has a fast, cheap, efficient production (yield and reduction of contamination).
Keywords: Toxoplasma gondii, Three-dimensional cell culture, Nanoparticles
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NB.03 - Beneficial effects of fructo-oligosaccharides (FOS) and arginine on the intestinal mucositis, induced by 5- fluorouracil (5-FU)

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Mucositis is one of the most common complications in patients undergoing chemotherapy or radiotherapy. The use of compounds with action on the immune system and intestinal microbiota may be a beneficial alternative for the prevention and/or treatment of mucositis. So, the aim of this study was to evaluate the effects of FOS and arginine on intestinal damage in experimental mucositis. Balb/c mice were randomized into 4 groups: CTL (without mucositis + saline), MUC (mucositis + saline), FOS (mucositis + supplementation with FOS – 1st until 10th day) and ARG (mucositis + supplementation with arginine – 1st until 10th day). On the 7th day, mucositis was induced with an intraperitoneal injection of 300 mg/kg 5-FU. After 72 h, weight variation, intestine length, intestinal permeability (IP), morphometry and histopathology analysis were evaluated by ANOVA two way test. Significance level was set at $p < 0.05$. The MUC group showed lost weight, reduced intestine length and increased IP ($p < 0.05$). Results showed presence of tissue damage, inflammatory cells and ulcerations in the ileum of animals of MUC group. FOS and arginine supplementation reduced lost weight, intestinal permeability and maintained the intestine length at physiologic levels ($p < 0.05$). However, arginine was more effective in reducing tissue damage and maintaining villus height in the ileum compared with FOS group. In conclusion, the present results show that FOS and arginine restored intestinal barrier, decreased lost weight and the inflammation induced by mucositis. These immunomodulators could be important adjuvants in the prevention and treatment of mucositis.
Keywords: arginine, fructo-oligosaccharides, mucositis
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