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Carbon nanotubes are graphene sheet structures with a striking mechanical strength, chemical stability, exceptional electrical and thermal conductivity. Its application in constantly growing, ranging from printer inks to drug delivery systems. Since the physicochemical properties of the compounds vary when they are produced at nanoscale, and that the environmental systems are dynamic, it is not possible to predict the hazards associated with the release of nanomaterials into the environment both for human and ecosystem health. So, it is necessary to carry out a comprehensive analysis of the toxicity of water and effluents by studying the behavior of new technologies in ecosystems.

In this work, toxicological assays of multiple wall carbon nanotubes (MWCNTs) of different dimension were done (MWCNT A is short and width, MWCNT B is large and thin). Zebrafish were used as biomarkers due to their short development times. Tests done were acute toxicity (mortality), teratogenicity (hatching rate and morphology), general developmental anomalies and tissue-specific toxicity (morphology and functioning of brain, heart and liver).

Zebrafish embryo were incubated with 0.005-50 ppm MWCNTs, then mortality, hatching rate and morphology were evaluated. Zebrafish larvae were incubated with 0.005-50 ppm MWCNTs, next morphology (bent spine, jaw malformation, head opacity, liver opacity, yolk opacity, small head, tail malformation, and uninflated swim bladder) and functioning of brain and heart and were analyzed. No MWCNT was found to be lethal or teratogenic at the concentrations evaluated, although MWCNT A caused morphological abnormalities in larval development. On the other hand, both MWCNTs reduced the swimming activity of the zebrafish at different concentrations, whereas no changes in heart rate were observed.

Results were different for both carbon nanotubes, indicating a potential dissimilar toxicity between MWCNTs, which could be due to the different dimensions.

Keywords: carbon nanotubes, nanotoxicology, zebrafish

INFECTOLOGY 6

(412) 6B6 BINDING PROTEIN: A NOVEL ANTIGENIC PROTEIN OF *TRYPANOSOMA CRUZI* WITH DIAGNOSTIC POTENTIAL

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Chagas disease (ChD), caused by the protozoan *Trypanosoma cruzi*, affects approximately between 6 and 7 million people around the world and remains a major public health concern throughout much of Latin America. During its chronic phase, the diagnosis relies on serological methods, being the most extensively used Indirect Hemagglutination Assay (IHA), Indirect Immunofluorescence Assay (IFA) and Enzyme-Linked ImmunoSorbent Assay (ELISA). Given that none of these assays render 100% specificity and sensitivity (*gold standard method*), the World Health Organization (WHO) recommends two tests in parallel with the use of a third one in case of discordances, for reaching a precise diagnosis of *T. cruzi* infection. In this context, the objective of our work is to establish the diagnostic utility of a *T. cruzi* protein, which was discovered as the target molecule to a single chain recombinant antibody (scFv 6B6), isolated from an antibody library made from B cell of patients with chronic Chagas heart disease. This 6B6 binding protein (6B6-BP), of 175-250 KDa, is found in the cytoplasm of the three morphological forms of the parasite belonging to different Discrete Typing Units (DTUs), but not in other trypanosomatids, like *T. brucei* and *Leishmania spp*, or in mammalian cells. After isolating 6B6-BP from *T. cruzi* lysate by immunoprecipitation, the reactivity of sera from patients with chronic ChD, with cutaneous leishmaniasis, and non-infected individuals was assessed by Western-Blot. Results showed that only sera from chronic ChD and one from a patient with mixed *T. cruzi-Leishmania* infection recognized 6B6-BP. Although its identity is under current investigation, our preliminary data positions 6B6-BP as a potential specific diagnostic marker for this disease. We expect that our research will contribute to overcome this issue, enabling the effective serologic discrimination of ChD from other trypanosomiasis.

Keywords: diagnosis, new specific antigen, infectious diseases.

(115) DIFFERENTIAL DIAGNOSIS OF *TRYPANOSOMA CRUZI* INFECTED POPULATIONS USING THE TRYPOMASTIGOTE SMALL SURFACE ANTIGEN

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Chagas disease is caused by *Trypanosoma cruzi*. Available drugs are mostly effective during the acute phase and display less advese effects during childhood. New serological, easy-to-assess markers able to distinguish between 1) acute and chronic infections and 2) endogenous and maternal IgG in congenital infections, are needed. In this study we analized the antigenic core (from T-24 to S-62) of the previously validated TSSA (*T*rypomastigote *S*mall *S*urface *A*ntigen) protein in ELISA assays. Using three 15-mer deletional variants (TSSA30-44: 30-TSSTPPSGTENKPAT-44, TSSA36-50: 36-SGTENKPATGEAPSQ-50, TSSA42-56: 42-PATGEAPSQPGASSG-56) expressed as GST-fusion proteins, we analized serum samples from 2 *T. cruzi* infected populations: 8 from acutely infected patients (vectorial) and 86 from chronic patients (>8 years of infection). Serum samples from infected acute patients showed equivalent reactivity against 2 or 3 deletion variants. In contrast, serum samples belonging to a chronic population showed specificity against the TSSA30-44, predominantly. On the other hand, in the context of a project that aims to evaluate TSSA24-62 as a serological marker of treatment efficacy we identified a child with particular features. Briefly, a newborn that clarified maternal anti-TSSA24-62 antibodies at 4.2 months and conventional – whole parasite based-ELISA (tELISA) at 7.2 months showed an increase in TSSA24-62 and SAPA reactivity at 10.5 months. Later, at 19.2 months, tELISA and HAI became positive and this child was diagnosed as *T. cruzi* infected and treatment was initiated. TSSA24-62 showed better sensitivity compared to tELISA and, most interestingly when evaluated against TSSA deletion variants, this child showed differential immune signatures compared to its mother. In this study we showed that the use of small antigenic sequences inside TSSA can reveal different immune signatures in *T. cruzi* infected populations which can be exploited as a differential diagnosis tool.

Keywords: Chagas disease, Trypomastigote Small Surface Antigen, differential diagnosis.

(1042) MOLECULAR DETECTION OF *Trypanosoma cruzi* IN A PATIENT WITH SYSTEMIC LUPUS ERYTHEMATOSUS AND REACTIVATION OF CHAGAS DISEASE

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Abstract: The objectives of this work were amplify specific DNA of *Trypanosoma cruzi* by conventional PCR and measure the parasitic load using PCR in real time in blood of patient with reactivation of Chagas disease acquired by transfusion. Indirect Hemagglutination and Ig G-ELISA test were performed. The DNA was purified with CTAB (Hexadecyltrimethyl Ammonium Bromide) as previously reported. PCR based detection of the 330-bp minicircle variable region of parasitic kinetoplastid DNA (kDNA-PCR) was carried out in blood

samples using primers 121 and 122. Parasitic loads were determined by means of TaqMan Real Time PCR (qPCR) targeted to a 166-bp segment from *T. cruzi* satellite DNA (SatDNA).The results for anti-*T. cruzi* serodiagnosis were IAH: 1/128 and ELISA positive. The Microhematocrit analysis reveal protozoan forms, while kDNA-PCR allowed detection of *T. cruzi* DNA in peripheral blood and the Real Time PCR revealed a mean of 120 par eq/ml of blood. The role of *T. cruzi* parasitemia on the onset of chagasic reactivation due to immunosuppressive treatments is poorly explored. The PCR provided a rapid differential and sensitive diagnosis of *T. cruzi* reactivation prompt administration of specific chemotherapy.

Keywords: *Trypanosoma cruzi,* DNA, PCR, Chagas.

(1074) **QUANTIFICATION OF *TRYPANOSOMA CRUZI* EPIMASTIGOTES: A COMPARATIVE STUDY OF FLUOROMETRIC METHODS**

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Cell counting with Neubauer chamber is a traditional tool of great utility and precision in the quantification of parasitic forms of *T. cruzi.* However, this method has some limitations, including long-operating times and subjectivity in counts, which makes it impractical for testing antiparasitic compounds at medium or large scale. With the objective of validating a technique that allows us to test a library of compounds, two alternative fluorescent methods of quantification of parasites were tested: transgenic GFP epimastigotes and a resazurin (Rz) reduction-based assay. GFP transgenic and wild type epimastigotes of the Y strain were grown under standard culture conditions and treated with the reference drugs (Benznidazole-BZ- and Nifurtimox -NFX-). Fluorescence was recorded on a plate fluorometer (BMG Fluostar Optima). Neubauer chamber count was performed in parallel. We confirmed a linear correlation ($r2 = 0.99$) between the number of parasites and the fluorescence signal, with both Rz and GFP. The linearity, sensitivity, limit of detection, limit of quantification and range for both methods were analyzed. The accuracy and precision of the two techniques were evaluated using the EJCR (Elliptic Confidence Region) test. Although both methods showed good correlation, GFP showed a better correlation with the standard method.

(1557) **EFFECT OF THE MECHANISM OF DEGRADATION OF TRYPTOPHAN IN THE INFECTION OF HUMAN PLACENTA BY *Trypanosoma cruzi***

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L-Tryptophan(Trp) is catalyzed by Indoleamine 2,3-dioxygenase (IDO) in the kynurenine (Kyn) pathway (KP). IDO is highly expressed in the placenta. Local depletion of Trp and/or the presence of metabolites of the KP mediate immunoregulation and exert antimicrobial functions, which is involved in the inhibition of intracellular pathogen replication. This system has been described to participate in the infection of Chagas disease, but the interaction of placental tissue with Trypanosoma cruzi (T. cruzi), the causal agent of congenital Chagas transmission, is not yet studied. Objective: To analyse the effect of the degradative mechanism of tryptophan in the infection of human placenta by T. cruzi. Methods: Explants of human placenta were co-cultured with 10^5 trypomastigotes of T. cruzi (Infected, n=3) or without (Control, n=3) for 4, 24 and 96hs. Placental explants were treated with 50 μM and 100 μM of L-Trp (n=3). We used paraffin-embedded placentas from Chagasic pregnant women (Infected, n=12) and normal placentas at term (Control, n=5). Kyn production were measured. Parasitic load was determined by qPCR. Immunohistochemistry were used to determination of IDO protein expression. Significance was determined at $p<0.05$. Results: Levels of Kyn were significantly decreased in 96hs of co-culture infected group ($p<0.001$) as compared to control group. Parasitic load was no modified with different concentration of L-Trp ($p>0,05$). IDO expression was decreased in Chagasic human placentas ($p<0.05$) compared to normal ones. Conclusion: T. cruzi modifies the catabolic tryptophan pathway in human chorionic villi in vitro and in vivo. This pathway could participate in the process of infection of placental tissue in the congenital transmission of Chagas. Grants: PICT2012-1061, MINCyT-PID-2014, SECyT-UNC, UNVM, PICT-V-2015-0074. Keywords: Trypanosoma cruzi, Human placental, Tryptophan, Indoleamine 2,3 dioxygenase, Kynurenine

(1497) **EFFECT OF *Trypanosoma cruzi* INFECTION IN TROPHOBLAST CELLS (BEWO CELL LINE)**

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Congenital Chagas has become a global health problem due to the migration of chagasic mothers from endemic to non-endemic countries. During congenital transmission, the parasite breaks down the placental barrier. It has been shown that placental immune response exerts a deleterious effect on *Trypanosoma cruzi* (*T. cruzi).* Nitrosative/oxidative stress and cytokine profile are mechanisms that prevent microorganism invasion and fetal infection. This study aimed to evaluate the role of trophoblast cells (BeWo cell line) on *T. cruzi* infection. We induced BeWo syncytialisation with forskoline and tested it by immunofluorescence assays and staining nucleus. Cytotrophoblast (CT) and Syncytiotrophoblast (ST) were co-cultured for 24 hs with trypomastigotes of Tulahuen strain (ratio 1:1) and reinfections were done at 12, 24 and 48 hs. *T. cruzi* survival capacity in supernatant media (SN) from BeWo CT and ST cell conditioned cultures were studied. Culture media quantifications: nitric oxide (NO; Griess assay), reactive oxygen species (ROS; fluorescent probes) and hCG and IL-6 (ELISA). NO and hCG production increased more than 1.5 fold ($p<0.05$) in infected BeWo ST, but no differences were observed in IL-6 production. ROS production of infected BeWo ST increased more than 1.8 fold ($p<0.05$). There were not significant differences between reinfected and control groups respect to the survival of the parasite after 96hs of culture. Mobile parasites incubated in SN from BeWo ST decreased 75% ($p<0.05$) compared with fresh medium and SN of BeWo CT. These results suggest that trophoblast cells are able to modulate *T. cruzi* infection, independently of their reinfection, by forming syncytiotrophoblast and producing harmful metabolites for the parasite. Grants: PICT2012-1061/2015-0074,SECyT-UNC, UNVM.
Keywords: *Trypanosoma cruzi,* BeWo cells, Nitrosative/oxidative stress, cytokine.

(1884) **IMPLEMENTATION RESEARCH TO MONITOR ACUTE TOXOPLASMOSIS SCREENING IN PREGNANT WOMEN AT PUBLIC HOSPITALS FROM JUJUY PROVINCE, ARGENTINA: IMPLICATIONS FOR CONGENITAL TOXOPLASMOSIS PREVENTION**

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The major problem in public health related to Toxoplasmosis is when women of childbearing age acquire Acute Toxoplasmosis (AT) infection during pregnancy. In these cases, congenital toxoplasmo-