medicina

BUENOS AIRES, VOL. 83 Supl. V - 2023

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MEDICINA (Buenos Aires) - Revista bimestral – ISSN 1669-9106 (En línea)

Registro de la Propiedad Intelectual N° 02683675
Personería Jurídica N° C-7497
Publicación de la Fundación Revista Medicina (Buenos Aires) Propietario de la publicación: Fundación Revista Medicina
Queda hecho el depósito que establece la Ley 11723

Publicada con el apoyo del Ministerio de Ciencia, Tecnología e Innovación Productiva.
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Vol. 83, Supl. V, Noviembre 2023

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447. 623. **ANTI-ECHINOCOCCAL ACTIVITY OF CANNABIDIOL AGAINST *ECHINOCOCCUS GRANULOSUS*: *IN VITRO* AND *IN VIVO* STUDY.**

Albani Clara María[1,2], Fuentes Giselle[1,5], Ramírez Cristina[3,4], Pensel Patricia Eugenia[1,2], Gatti Florencia[1,2], Albanese Adriana[1,2], Elissondo María Celina[1,2]

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Cystic echinococcosis (CE) is a global parasitic zoonosis caused by infection with the larval stage of *Echinococcus granulosus sensu lato*. CE affects more than 1 million people worldwide, causing important economic costs in terms of management and livestock associated losses. Albendazole is the drug of choice for the treatment of human CE. However, its low aqueous solubility, poor absorption, and consequently erratic bioavailability are the cause of its chemotherapeutic failures. Based on the problematic described, new treatment alternatives are urgently needed. In the present study, the *in vitro* and *in vivo* efficacy of cannabidiol (CBD), the second most abundant component of the *Cannabis sativa* plant, was demonstrated against *E. granulosus sensu stricto*. CBD (50 μg/mL) caused a decrease in protoscoleces viability of 80 % after 24 h of treatment which was consistent with the observed tegumental alterations. Collapse of the germinal layer was observed in 40 % of cysts treated with 50 μg/mL of CBD during 24 h. In the clinical efficacy study, all treatments reduced the weight of cysts recovered from mice compared with control group. However, this reduction was only significant with ABZ suspension and the CBD + ABZ combination. The co-administration of CBD with ABZ suspension enhance the *in vivo* efficacy of drugs alone, although the differences were not significant. Moreover, the ultrastructural alterations observed in cysts recovered from mice treated with the combination were greater than that provoked with the monotherapy. Further *in vivo* studies will be performed by adjusting the dosage and frequency of CBD and CBD + ABZ treatments.

P4-PHARMACOLOGY

THURSDAY 16TH NOVEMBER 14:00-15:30

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448. 112. **PROTECTIVE ACTIVITY ELICITED BY *CANNABIS SATIVA* AND *TILIA X VIRIDIS* EXTRACTS AGAINST GLUTAMATE INDUCED OXIDATIVE STRESS IN HT-22 NEURONS**

Elina Malén Saint Martin[1], María Laura Barreiro Arcos[2], Ignacio Peralta[1], Carla Marrassini[1], Laura Cogoi[1], María Rosario Alonso[1], Claudia Anesini[1].

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Oxidative stress (OS) affects the central nervous system in epilepsy. The prevention of neuronal cell death induced by OS might be an interesting therapeutic approach in the treatment of this and other neural disorders. *Cannabis sativa* L. is used in the treatment of epilepsy, being cannabidiol (CBD) its main anticonvulsant compound. *Tilia x viridis* is widely distributed in Argentina and has antioxidant and sedative activities. The aim of this work was to evaluate the effect of an ethanolic extract of *C. sativa* (CSRD), and an aqueous extract of *T. x viridis* (TE) and their association on the OS induced by glutamate (Glu) in the HT-22 cell line. The main compounds in CSRD and TE were identified and quantified by HPLC-MS/MS and HPLC-UV. Cells were pre-incubated with the extracts for 2 hs and challenged with Glu 5 mM for 12 or 24 hs to assess: cell viability with MTT spectroscopically, and reactive oxygen species (ROS) with 2',7'-dichlorodihydrofluorescein diacetate (DCF-DA) in a fluorescence reader and microscope. Results were expressed as media ± SEM. *p< 0,05, ****p<0.0001 Student's t test vs. basal; ## p<0,01, #### p< 0,0001; $ p< 0,05, $$ p<0,01 ANOVA + Dunnett's test vs. Glu and vs. CSRD 1 μg/ml + Glu respectively. Results: CBD in CSRD: 62.36 ± 1.57%w/w. Epicatechin (E) in TE: 0.16 ± 0.003%w/w. Viability: Basal: 100.00 ± 0.81%; Glu: 25.47 ± 0.44%****; CSRD 1 μg/ml + Glu: 47.88 ± 3.51####; TE 500 μg/ml + Glu: 31.96 ± 0.84%####; TE 500 μg/ml + CSRD 1 μg/ml + Glu: 77.79 ± 8.27%$$. ROS: Basal: 100.00 ± 5.15%; Glu: 130.26 ± 10.82%*; CSRD 1 μg/ml+ Glu: 124.40 ± 31.54%; TE 500 μg/ml + Glu: 50.86 ± 2.75%##; TE 500 μg/ml + CSRD 1 μg/ml + Glu: 62.42 ± 6.31%$.

Conclusions: Glutamate reduced cell viability and increased ROS. CSRD 1 μg/ml improved cell viability and reduced ROS production (no statistically significant). TE enhanced CSRD effects. Results suggest the association of *C. sativa* with *T.* x *viridis* could be interesting to assess in animal models of epilepsy.

449. 151. **DEVELOPMENT OF NANOPARTICLES WITH A GALLIC ACID**

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Nanotechnology is a useful approach to deliver antioxidants into cells. Our aim is to produce silica nanoparticles (SiNPs) with an antioxidant polyphenol molecule, gallic acid (GA), one of the principal bioactives included in carqueja (*Baccharis articulata).* SiNPs were prepared by Stöber method. Carqueja extract (CE) was obtained with a sample of 30 mg dried leaves/mL heated at 70°C for 14 min. We determined its antioxidant capacity (AC) by the DPPH radical method and polyphenol concentration (Pph) by Folin technique (which renders gallic acid content). We evaluated CE effect on neutral lipid content in Hep-G2 cells, used as a model for non-alcoholic fatty liver disease (NAFLD cells), by Oil-Red-O staining. NAFLD was assessed by treating cells with 0.05mM oleic acid for 48h. CE showed AC of 51.5 ± 1.3 % and Pph of 427 ± 50 μg/mL; CE decreased lipid content in NAFLD cells, which is set to 100 arbitrary units (AU) (100 ± 14 AU [NAFLD cells] *vs* 51 ± 19 AU [CE + NAFLD cells], p<0.05). We prepared SiNPs with TEOS as a precursor. We obtained spherical SiNPs, size of 110 ± 21 nm (ANP) and 376 ± 67 nm (BNP). SiNPs were homogeneous population (dynamic light scattering analysis) and had negative potential Z. A portion of the SiNPs were positivized with APTES. Different concentrations of gallic acid (0.2 to 8 mg/mL) were adsorbed on 8 mg/mL SiNPs by constant agitation at 25°C for 24h. Between 0.2-4 mg/mL GA, adsorption on SiNPs(-) is directly proportional with its concentration but logarithmic for the SiNPs(+). With a maximum efficiency of 100% for both ANP (- and +), 85% for BNP(-) and 94% for BNP(+). When 8 mg/mL of GA was studied, only 30% was adsorbed for both SiNPs(-)