MCTA 1

CYTOTOXICITY AND GENOTOXICITY OF NECROTON (*Vernonia condensata*) AQUEOUS EXTRACT IN *Allium cepa* TEST SYSTEM

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V. condensata, a medicinal species with analgesic, hepatoprotective, digestive, stimulating and liver tonic properties, is widely used by the South American population. Thus, this study aimed to assess the genotoxic effect of *V. condensata* aqueous extract in the *A. cepa* test system. Dry leaves were collected, dried, and ground and the aqueous extracts prepared in doses of C_1: 1.4; C_2: 2.9 and C_3: 5.8 g/L of dry extract in distilled water at 100 °C in infusion for 10 minutes. Ten repetitions/dose were used, with distilled water (C_0: negative control) and 0.2 g/L NaN3 (C_4: positive control) as control. After bulb germination in distilled water in glass pots for 72 h, the water was replaced by extracts, remaining for 24 h. Fifteen roots were collected from each bulb and fixed in 3:1 Carnoy for 24 h. Smear slides were then prepared using the root meristem technique. The number of dividing cells was determined to calculate the mitotic index (MI), micronucleus frequency (MF) and mitotic abnormalities (MA) of each dose, totaling 2000 cells/dose. Means were submitted to analysis of variance and significant data to regression analysis, at 5% probability. The C_2 and C_3 doses showed cytotoxicity with MI of 18.43% and 13.22% compared to C_0= 22.95% and C_4= 9.1%, while C_3 expressed genotoxicity, with MF of 8.5%, C0= 0% and C_4= 13.85%, and MA of 25.75%, with C_0= 0% and C_4= 32.85%. For C_2, the usual V. condensate dose, results indicate that care is needed when consuming the plant, since it was cytotoxic. The C_1 dose proved to be safer and is recommended for the medicinal use of *V. condensata*.

MCTA 2

LOS ANIMALES DOMÉSTICOS Y SILVESTRES COMO CENTINELAS DE CITOGENOTOXICIDAD EN AMBIENTES DIFERENTES

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Un sistema centinela debe brindar una advertencia temprana de riesgo para la salud y está definido por las variables especie animal, tipos de efecto y ambiente monitoreado. El objetivo de este proyecto es utilizar el ensayo de micronúcleos citoma (MNcit) descripto en humanos y adaptarlo a animales de ambientes urbanos (caninos y felinos), agropecuarios (bovinos) y silvestres (aves y felinos). Se utilizaron las coloraciones de Giemsa, naranja de acridina y Feulgen. Se analizaron entre 10^3-10^5 células/individuos y se informan los resultados/10^3 células. En caninos cachorros (n= 6), se advirtió la citotoxicidad del antiparasitario piperazina a través de células cariolíticas antes 32,9 ± 8,9 y después del tratamiento 63,3★ ± 7,7; en adultos (n= 6), se observaron 1,4 ± 0,3 MN y 1,9 ± 0,5 núcleos irregulares (I). En aves silvestres, MN, brotes (Br), núcleos hendiduras, binucleadas, colas y puentes fueron determinadas en 17 sps. Se postula a *Saltator aurantiirostris* y *Columbina picui* para ser usadas como centinelas de este ambiente. En felinos, se observaron 1,0★★★ ± 0,2 eritrocitos MN en silvestres y 16,3 ± 4,6 en domésticos. El ambiente silvestre, supuestamente exento de contaminantes, podría explicar los niveles más bajos de los primeros. En bovinos (N= 12), la frecuencia de MN, Br y núcleos I fue 1,2 ± 0,2, 1,4 ± 0,4 y 20,4 ± 2,7. Los núcleos I observados en caninos y bovinos no son descriptos en MNcit humano. La información sobre indicadores de cito y genotoxicidad en estas especies aporta a la evaluación del impacto de contaminantes ambientales en la salud y su uso como centinelas.

MCTA 3

ANTIGENOTOXIC AND ANTICYTOTOXIC EVALUATION OF A COUMARIN-CHALCONE (4-MET) BY MICRONUCLEUS TEST IN MICE BONE MARROW

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In the last few years, molecules belonging to different classes of compounds have been synthetically combined in order to obtain hybrids with enhanced biological activities. Chalcones and coumarins, found both naturally and synthetically, are classes of compounds which present many biological activities. Recently, many coumarin-chalcone hybrids have been synthesized with the purpose to improve their biological activities and to reduce the side effects. The aim of the present study was to evaluate the antigenotoxic and anticytotoxic effects of a coumarin-chalcone hybrid (7-methoxy-3-(E)-3-(3,4,5-trimethoxyphenyl) acryloyl-2H-cromen-2-one) (4-MET) in mice bone marrow cells by micronucleus test. The animals were separated in groups, then co-, pre- or post-treated with doses of 25 and 50 mg/Kg of 4-MET and an administration of cyclophosphamide (CPA) at different times depending on the type of treatment. CPA and DMSO were used as positive and negative controls, respectively. The results showed that all doses of 4-MET presented significant antigenotoxic activity by reducing CPA's harmful effects. For anticytotoxic evaluation, the dose of 50 mg/Kg showed anticytotoxic effect in all performed treatments. By the other hand, the dose of 25 mg/Kg was anticytotoxic only at pre-treatment. In summary, 4-MET showed antigenotoxic and anticytotoxic effects under the experimental conditions performed.

MCTA 4

ANTIGENOTOXIC EVALUATION OF A COUMARIN-CHALCONE (4-MET) AGAINST DNA DAMAGE INDUCED BY CYCLOPHOSPHAMIDE USING IN VIVO COMET ASSAY

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Chalcones and coumarins are families of natural and/or synthetic compounds which have been reported to possess many biological activities, including anti-inflammatory, antioxidant and anticancer. Because of the relevance of these two compounds and their antioxidant properties, a series of coumarin-chalcone hybrids have recently been synthesized with the purpose to enhance the biological activities. The aim of the present study was to evaluate the antigenotoxic effect of coumarin-chalcone hybrid (7-methoxy-3-(E)-3-(3,4,5-trimethoxyphenyl)acryloyl-2H-cromen-2-one) (4-MET) in mice bone marrow cells by comet assay. To assess the 4-MET's protective effects against DNA damage induced by cyclophosphamide (CPA) we performed co-, pre- or post-treatment in animals using doses of 25 and 50 mg/Kg of 4-MET and an administration of CPA at different times depending on the type of treatment. CPA and DMSO were used as positive and negative controls, respectively. The obtained results showed that 4-MET presented antigenotoxic activity with a significant reduction of CPA's genotoxic effects in all tested doses. The post-treatment (50 mg/Kg) presented the highest reduction of DNA breaks, which can be an indication of repair systems activation. Our results indicated that 4-MET presented expressive protective effect and can be a probable chemopreventive for the development of new therapies.