P049- N-METHYL-N-NITROSOUREA TOXICOLOGY: DATA FROM A RAT MODEL

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Aims: This study aimed to address the toxicological effects of MNU administration in female rats.

Introduction: N-methyl-N-nitrosourea (MNU) is the oldest member of the nitroso-compounds that can alkylate DNA. MNU induces tumor development in several organs, depending on the animals' specie and strain, dose, route, and age at administration.

Methods: Twelve Sprague-Dawley female rats were divided into two experimental groups: MNU (n=10) and control (n=2). At seven weeks of age, animals from group MNU received an intraperitoneal administration of the carcinogen MNU, at a dose of 50 mg/Kg. Animals from group control received an administration of vehicle (saline solution 0.9%). Animals were humanely sacrificed 18 weeks after MNU or vehicle administration by intraperitoneal injection of xylazine and ketamine, followed by exsanguination by cardiac puncture.

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A complete necropsy was performed. Heart, lungs, liver, spleen, kidneys, adrenal glands, clitoral glands, and lymph nodes were removed and immersed in buffered formalin for histopathological analysis.

Results: Animals from group MNU developed a total of 21 mammary tumors. The organs of animals from group MNU presented a higher number of lesions with higher grade, when compared with the organs of animals from group control. Hyalinization, coagulative myocytolysis, congestion hemorrhage and hyperemia were observed in the heart. Lungs exhibited interstitial inflammation, arteriolosclerosis, arteriosclerosis, congestion, and hyperemia. Interstitial inflammation, congestion and cholestasis were observed in the liver. The spleen presented interstitial inflammation, congestion, hemosiderosis and hyperemia. Congestion, hyperemia, blebbing, hydropic degenerescence, hyaline casts and cystic dilations were found in the kidneys. Adrenal glands presented hyperplasia, congestion, and hydropic degeneration; while clitoral glands presented interstitial fibrosis, ductal dilation, interstitial inflammation, and hyperemia. Infiltrate and congestion were observed in the lymph nodes.

Conclusions: The higher number and higher grade of the lesions in group MNU were due to the carcinogenic action of the chemical agent MNU.
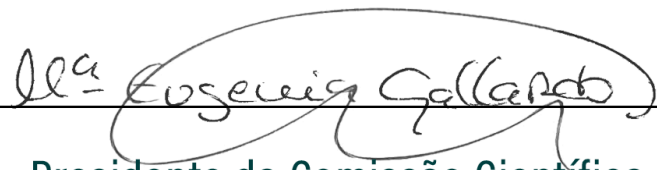
References:
Faustino-Rocha AI, Ferreira R, Oliveira PA, Gama A, Ginja M. 2015. N-methyl-N- nitrosourea as a mammary carcinogenic agent. Tumor Biology 36 (12): 9095-9117. DOI: 10.1007/s13277-015-3973-2.

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CERTIFICADO

A Comissão Organizadora das III Jornadas Ibéricas de Toxicologia certifica que Helena Vala, Carmen Vasconcelos-Nóbrega, Adelina Gama, Rita Ferreira, Paula A. Oliveira, Ana Faustino-Rocha, participaram com um póster intitulado "N-methyl-N-nitrosourea toxicology: data from a rat model" nas III Jornadas Ibéricas de Toxicologia celebradas nos dias 4 e 5 de junho de 2021.

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