INVESTIGATIONS CONCERNING THE VALUES OF SOME BIOCHEMICAL PLASMA COMPOUNDS IN WISTAR RATS GRAFTED IV. WITH A TRANSPLANTABLE TUMOUR (WALKER 256 ASCITIC CARCINOMA), CORRELATED WITH THE DAILY DEUTERIUM DEPLETED WATER INTAKE

Marcus I*, B. Sevastre*, Pop Al*, Daniela Zinveliu**, Berdea P***

*USAMV, Cluj-Napoca. Faculty of Veterinary Medicine, Department of Pathophysiology
Manastur street, nr. 3-5, Cluj-Napoca. Email: iomnmbmarcus@gmail.com
**FMV Cluj-Napoca. Clinical Laboratory. *** INCDTIM Cluj Napoca

Key words: walker 256 ascite carcinoma, wistar rats, ASAT, ALAT, PAC, GGT, PAL.

SUMMARY

The aim of the experiment was to prove the clinica l and paraclinical (biochemical) effects of the daily deuterium depleted water intake on the biological behaviour of the Walker 256 ascitic carcinoma grafted intravenous (iv) in the Wistar rats, correlated to the values of some biochemical plasma compounds, like acid phosphatase (PAC), alaninaminotransferase (ALAT, GPT, ALT), aspartataminotransferase (ASAT, GOT, AST), gamma glutamiltranspeptidase (GGT), alchaline phosphatase (PAL). The experiment was conducted on 20 Wistar rats, which were distributed in 4 groups, each group containing 5 adult animals. First of all, the animals from group 2 and 4 were administrated ad libitum daily deuterium depleted water, for a period of six months, and then inoculated (group 4) intravenously with Walker 256 ascite liquid (85 000 – 90 000 tumour cells/ml ascite liquid) obtained from the Oncologic Institute “Testioreanu”, in Bucharest. During the first stage of the experiment (1 to 6 months) for all animals were weekly determined the body weight and some clinical aspects, regarding the food and water intake, some peculiarities of the behaviour and the health status. After intravenous inoculation of the Walker 256 ascitic carcinoma, all animals were rigurously observed, and were weekly evaluated from the point of view of the body weight evolution, respectively of some abnormal manifestations. Finaly, the experimental groups were sacrificed after 5 weeks from the intravenous inoculation with Walker 256 ascite carcinoma, under narcose with ether, by cardiac punction and blood samples collecting. The obtained results at the necropsic examination revealed the presence of the solid tumours at the level of some lymph node groups, lung and liver in 3 animals out of 5 in the case of the control tumour group (group 3). In comparance to this situation, in the case of group 4 (inoculated intravenously with Walker 256 carcinoma and which consumed the deuterium depleted water), tumours weren’t obviously present in any of the animals. The blood samples were centrifuged and from the obtained plasma samples, the following enzymes were determined: acid phosphatase (PAC), alaninaminotransferase (ALAT, GPT, ALT), aspartataminotransferase (ASAT, GOT, AST), gamma glutamiltranspeptidase (GGT), alkaline phosphatase (PAL). The obtained results revealed that the values of the determined enzymes are inside the normal limits for this species and animal category, respectively between
the ranges of 28 - 104 ui (ASAT), 12 - 40 ui (ALAT), 0,5 – 3,2 ui (PAC), 3 - 10 ui (GGT) and 50 - 98 ui (PAL). Compared to the situation of the control group (group 1), in the case of the control group which consumed deuterium depleted water, the variation limits of the enzyme values are situated between 48 - 184 ui (ASAT), 19 - 52 ui (ALAT), 0,2 – 0,9 ui (PAC), 2 - 5 ui (GGT) and 97 - 411 ui (PAL). The measurement of the plasma enzymes for the tumour control group (inoculated intravenously with Walker 256 carcinoma), revealed the following aspects: 39 - 91 ui (ASAT), 18 - 73 ui (ALAT), 0,2 – 1,0 ui (PAC), 1 - 15 ui (GGT) and 56 - 93 ui (PAL). In comparison, in the case of group 4 (inoculated intravenously with Walker 256 carcinoma and which consumed deuterium depleted water), the obtained values are situated between: 35 - 86 ui (ASAT), 14 - 34 ui (ALAT), 0,1 – 1,7 ui (PAC), 1 - 6 ui (GGT) and 77 - 105 ui (PAL). The analysis of these determined plasma enzymes variations for the animals from the experimental groups don’t reveal major differences between the control group and the animals from the groups 2 (which consumed deuterium depleted water) and 4 (inoculated intravenously with Walker 256 carcinoma and which consumed deuterium depleted water). It’s interesting that in the case of the tumour group too, the recorded variations don’t cross significantly the oscillation limits considered normal by scientific literature for this species and animal category, fact that could demonstrate that the measured enzymes (ALAT, ASAT, PAC, GGT, PAL) cannot be considered indicators for the experimental tumour growth.