Depleted Uranium And Its Impact On Animals and Environment in Iraq and Algeria (*SUGGESTED REVISION: COMPARISON OF EFFECTS ON ANIMALS AND ENVIRONMENT FROM IONIZING RADIATION FROM ABOVE-GROUND WEAPONS TESTING IN ALGERIA WITH DU USE IN IRAQ)*

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Introduction:

French nuclear tests in Algeria from 1960-1967 (*Al-Aboudi 2000*), and USA military activities in Iraq in 1991(*Aalem Abdul Hameed , 1998)* have thrown huge amounts of uranium contamination (and, in the case of Iraq, left thousands tons of depleted uranium, or "DU") over large areas of Algeria and Iraq respectively.

As a result, the people, animals, and environments in these areas have been and will continue to be irradiated by ionizing radiation for long periods of time.(*Gunther 1994*)

There are strong associations between the rise in incidence of some health problems in Iraq and the exposure to the war environment since 1991, and also in Algeria since 1960.

This study aims to reveal the toxic effects of weapons used in nuclear tests and in war on cells counts and on cell structure of experimental animals which lived in regions contaminated with depleted uranium (DU). Biological samples collected from different bombarded sites showed positive results on experimental camels.

Many epidemiology of cancer *[QUESTION: it is not clear what meaning you intend with the phrase „epidemiology of cancer" as it related to the later phrase „were observed in blood samples…" Do you mean to say, „many incidents,"? or, „many indications"? Or, „many precursor indications of cancer"? Please advise us here on what meaning you intended]* and many changes in hematological parameters were observed in blood samples taken from jugular vein of Iraqi and Algerian camels ,*Camels dromadarious,* in the southern governorates in Iraq, namely Basrah; and in the southern Sahara region, namely Ragan in Algeria.

This is an hematological analytic study comparing the various hematological parameters of the blood of camels which lived in two different regions: in south-Saharan Algeria, where they had been exposed to ionizing radiation from French nuclear weapons tests from 1960-68; and in southern Iraq, where they had presumably been exposed to ionizing radiation from the use of du weapons used by the Coalition Forces during the first Gulf War in 1991.

The study is designed to assess the association between the observed health problems of the animals which lived in regions contaminated with radioactive isotopes (from French nuclear weapons tests in Algeria and DU weapons use in Iraq), and their exposure to this radiation.

The following set of tables show also some clear differences in the values of hematological parameters between the exposed animals compared with another group of healthy camels which live in other clean environments

Many tests have shown leukemia in both Iraqi and Algerian people, camels and other animals. Within a given tissue, like blood, the cells vary greatly in their response to radiation and dose rate, the time, and period of exposure.

It is known (*Eitam et al. 1976*) that camels have high resistance to the various environmental stressors found in the different environments in which they live, and that their erythrocytes have osmotic resistance to hyperthermia and also to radiation effects.

The high hemolysis was observed in blood samples of camels, which had stayed a long time in some contaminated regions. From different studies and results, which were measured in our laboratory, erythrocytes of healthy camels showed a high resistance to heat and radiation. At the same time the human erythrocytes show more sensitivity to effects of radiation. That means the humans in these regions are more severely affected by the ionizing radiation.

Positive morphological changes counts of blood cells had been reported at different samples from different regions

Materials and methods:

Blood was obtained from [LIVE] camels, C*amelus dromadarius.* Whole blood was drawn by syringe from the jugular veins of donor animals in various regions. The blood was collected in citrated or heparinited tubes or EDTA as the anticoagulant.

All procedures were carried out on fresh samples at 0 to 5 C

The blood was filtered and centrifuged for 15 min at 1500 g. The plasma and buffy coat were carefully removed. Subsequently, the red cells were washed three times in 4 vol. of incubation medium whose composition has been reported elsewhere. *(Shaafi and Hajjar, 1970)*

Hemoglobin was determined from optical density at 540 mu after conversion of hemoglobin to cyanmethemoglobin. Counting was done in a well scintillation counter.
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Result and Discussion:

The tables show the results of analytical hematology and biochemical analysis for the blood samples.

The blood glucose concentration in more healthy camels (34 -126) mg% and showed in many samples in dangerous zones between (77 - 234) mg%.

The exceptionality high osmotic stability of camel erythrocyte show in the dangerous zone show fragility membrane through the high homolysis and the percent of Hb in the blood serum

Leukocyte counts were highest in camels which lived in dangerous regions, and the lymphocyte counts were highest in both young and older animals.

Some differences in plasma protein and glucose levels were found.

The samples of blood from camels in Algerian dangerous zones show high sedimentation in comparison with Iraqi samples.

Haemoglobin content was 14 and 12 respectively.

A few regions in south Algeria and Algeria [QUESTION: SHOULD THE SECOND REFERENCE READ, „IRAQ“ HERE?] showed total leukocyte count 22120/mm3 for males and about 18344 /mm3 for females. But there are no large differences between themes for camels in dangerous zones (where the leukocyte counts were much higher than normal) and those of healthy samples (sometimes between 140 - 358/mm3).

We must also study the seasonal variation in the camel blood. (*Ghosal A. K. ,et a 1973).*

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