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Abstracts

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ABSTRACTS



FREEZING AND FREEZE-DRYING OF BULL SPERMATOZA. The possible dependence of survival upon the time spermatozoa are in contact with the protective substance glycerol, prior to exposure to low temperatures, was investigated. Pre-treatment for five minutes provided at least as much protection as 18 hours. Microscopic observations on ice formation relative to survival in semen frozen by four different methods, in the presence and absence of glycerol, gave no evidence for the notion that physical injury by ice formed is the cause of death on freezing and thawing. Site and character of ice formed were preserved by freeze-drying. A study on the effect of rates of cooling on survival revealed that the theory of survival based upon vitrification by rapid cooling does not apply to bull spermatozoa. Spermatozoa in smears of semen on glass slides did not withstand the process of freeze-drying for various periods. Death was attributed to drying and/or reconstitution.

Sherman, J. K. Freezing and freeze-drying of bull spermatozoa. *American Journal of Physiology*. 190(2):281-286. August, 1957.

FRACTIONATION STUDIES ON THE MYCIN-NEOMYCIN FOR INTESTINAL ANTISEPSIS. Erythromycin alone was found to be unsatisfactory for preoperative preparation of the colon. Erythromycin-neomycin combination was found to be very effective in this experiment on seven human patients. Two hundred and fifty mg. of erythromycin and one gram of neomycin were given in combination every hour for four hours, then every six hours for 72 hours. In most cases in 2 days, but in all cases after 3 days of therapy, there were no strepto-

cocci, staphylococci or coliforms in the feces. The level for each type in each patient before therapy was from 1 million to over 1 billion bacteria per gram of feces. Clostridia were found in only one patient and were not eliminated by the therapy.

Cohn, I., Jr., and Longacre, A. B. Erythromycin and erythromycin-neomycin for intestinal antiseptis. *The American Journal of Surgery*. 94(3):402-408. September, 1957.

FRACTIONATION STUDIES ON THE ANTIGENIC NATURE OF TOXOPLASMA GONDII. Toxoplasmosis can produce disease in both man and animals, and is more serious in the young. One possible means of transmission from animals to humans is by improperly prepared meat of diseased, but clinically normal, swine. Biologics, if they can be prepared, might prove of value in prophylaxis and treatment.

Antigenic protein material prepared in this study from killed, lysed and purified cultures of *Toxoplasma gondii* when injected into mice induced a lower antibody production than that produced by the living protozoa in the disease. Two through 6 weeks after inoculation, the serum titers of inoculated animals were usually eight or above when the complement-fixation test was used, and twice this by the dye test used, hardly a tenth of the titer often found following an acute attack of the disease.

Hook, W. A., and Faber, J. E. Fractionation studies on the antigenic nature of *Toxoplasma gondii*. *Experimental Parasitology*. 6:449-458. September, 1957.

RADIATION AND HEALTH. The effects of the ionizing radiations, rays which can ionize matter in their path, were reviewed. They include alpha-rays, which have extremely slight penetrating powers, beta rays and gamma-rays. X-rays are essentially the same as gamma-rays, but are formed in a different way.

Some ill-effects of excess irradiation, including genetic changes, radiation sickness, chronic radiodermatitis, keloidal formation, anemia, bone necrosis, and osteosarcoma, were illustrated. They pointed out that the use of radioactive isotopes and x-rays outside the research field exposes more people to radiation. This calls for various devices which can measure the radiation a worker receives, such as film badges and pocket dosimeters attached on the person. Proper shielding and handling of material was illustrated.

A committee report made by the Medical Research Council of Great Britain

was reproduced from *The Hazards to Man of Nuclear and Allied Radiations*, p. 59, London, 1956. This report estimated the radiation which the people of England and Wales as a whole were receiving. It is reproduced here:

SUMMARY OF ESTIMATED POPULATION DOSES OF RADIATION TO THE GONADS EXPRESSED AS PERCENTAGES OF NATURAL BACKGROUND

Source or radiation	Approximate dose to gonads as a percentage of natural background
Natural background	100%
Diagnostic radiology	at least 22%
Radiotherapy	?
Shoe-fitting	0.1%
Luminous watches and clocks	1%
Television sets	much less than 1%
High altitude flying	insignificant
Occupational exposure:	
Radiology and industry	at least 1.6%
Atomic Energy Authority	0.1%
Fall-out from test explosions ..	less than 1%

Radiation and health. Chronicle of the World Health Organization. 11(8):247-254. August, 1957.

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RESPONSIBILITIES OF THE MEDICAL PROFESSION IN THE USE OF X-RAYS AND OTHER IONIZING RADIATION.

The paper stated that natural background (natural radiation) includes (1) cosmic rays, about 30 per cent of natural radiation, (2) gamma radiation from radioactive substances in the earth, about 45 per cent, and (3) radiations from natural radioactive elements in the body, especially potassium 40, about 20 per cent of natural radiation. The total radiation per year to the gonads is estimated to be between 0.07 to 0.17 roentgens. One roentgen represents an energy absorption of 93 ergs per gram of body tissue.

For the whole population, the United Nations Scientific Committee on the Effects of Atomic Radiation recommended that artificial radiation not exceed natural radiation. In Sweden and the United States, the radiation from diagnostic radiology alone (such as chest x-rays) is estimated to be at least this amount.

For a person exposed to artificial radiation in his occupation, this committee adopted the same maximum permissible limits of exposure recommended by the radiological profession and the International Commission on Radiological Protection:

- (1) 0.3 roentgens in any week or 3.0 roentgens in any 13 weeks, or a sustained irradiation rate greater than five roentgens per year to the gonads or to the whole body.
- (2) 50 roentgens to the gonads by the age of thirty.
- (3) 200 roentgens to the whole body by the age of sixty.

Responsibilities of the medical profession in the use of x-rays and other ionizing radiation. Chronicle of the World Health Organization. 11 (8):260-263. August, 1957.

A disease resembling mucosal disease has been reported in Great Britain recently.

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