

THE EXPERIMENTAL STUDY OF COMBINED EFFECTS OF IONIZING  
RADIATION, ALCOHOL AND TOBACCO SMOKE ON  
WARM BLOODED ANIMALS

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ABSTRACT

Results are presented of experimental study of socially significant (life span, reproductive function, working capacity) and medico-biological (immunological, biochemical, genetical, etc.) indices under the influence of ionizing radiation, alcohol and tobacco smoke.

The experiments were performed on 7000 white non-linear mice of both sexes. The effects of strontium-90 and polonium-210 differing in their radiation quality and metabolism in a warm blooded organism have been studied. The radionuclides were given with drinking water daily over the animal lifetime both separately and in combination with alcohol and tobacco smoke. The diurnal amount of alcohol simulated man's daily consumption of 2.5 g pure ethanol per 1 kg body weight, and the action of tobacco smoke corresponded to daily smoking of 20 cigarettes.

The mean lifetime shortening and the increased tumours yields observed in the experiments were found to be caused principally by the chronic action of ionizing radiation. But at the doses above 10 Gy the three factors combined caused the intensive metastatic spreading.

The gonadal changes and disturbances of the reproductive function in males were observed under the action of all factors in question, but in females the most manifestative deviations of their reproductive capacity from the control level were noted under the combined action of ionizing radiation, alcohol and tobacco smoke. The combination of these detrimental factors revealed summation and synergism of effects for humoral nonspecific protection and some immunological reactions.