ACTIVITY CONCENTRATIONS OF ^{137}Cs IN MEAT OF BROILER CHICKEN AFTER SINGLE AND CONTINUOUS APPLICATION.

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After the Chernobyl accident much interest was focused on the transfer of radiocaesium (^{137}Cs) and its suppression in the soil-plant-animal food chain because the fallout resulted in high levels of the radionuclide in the environment of Europe. Although a lower contamination of broiler chicken can be expected after the accident, the potential hazard of ^{137}Cs transfer by poultry products in the human diet should not be neglected. In literature the information about transfer in chicken is incomplete. In previous presentations (ESNA meetings in 1993-97) we described the transfer, distribution and half-live of radiocaesium in broiler chicken after application of artificially contaminated feed mixture or after feeding contaminated wheat from Chernobyl. Our results (Pöschl et al., 1997) indicated the different dynamics of radiocaesium in breast meat compared to leg meat in the chicken after short-time application (3 oral applications in 1 day). The aim of the present study was to find if the results are similar also after single and repeated (long-time) applications of an artificially contaminated feed mixture. Two experiments were carried out with broiler chickens (White Leghorn hybrid, race ISA VEDETTE). In experiment 1, one artificially contaminated oral dose of 5160 Bq of ^{137}Cs (activity concentration 1664 $Bq.g^{-1}$) was administered to 18-day-old chickens. In experiment 2, artificially contaminated oral doses of 500 Bq ^{137}Cs (activity concentration 161.3 $Bq.g^{-1}$) were administered to 14-day-old chickens twice a day (at 8:00 and 20:00h.) for 10 days. In experiment 1 and 2, four chickens were slaughtered for activity determination in meat (breast and leg muscles) 6, 12, 24, 48 and 96 hours and 2, 4, 8, 10 days, respectively, after the 1st application of ^{137}Cs.

The uptake of single oral ^{137}Cs was rapid and the maximal ^{137}Cs activity concentrations were recorded in breast meat (0.783 $Bq.g^{-1}$) 24 hours and in leg meat (1.005 $Bq.g^{-1}$) 6 hours after ^{137}Cs application. From the 24th hour of the experiment, radiocaesium activity concentrations in breast and leg meat decreased with the biological half-life ($T_{1/2b}$) of 84 and 66 hours, respectively. During a 10-day application of continuous doses of ^{137}Cs, the ^{137}Cs activity concentrations increased and were 3.988 Bq. g^{-1} in breast meat and 5.610 Bq. g^{-1} in leg meat on the 2nd day, and 7.427 $Bq.g^{-1}$and 7.698 $Bq.g^{-1}$, respectively, on the 10th day. Immediately after administration of radiocaesium stopped, the ^{137}Cs activity concentrations rapidly decreased with the biological half-life ($T_{1/2b}$) of 4.5 and 3.8 days, in breast and leg meat, respectively.

The results demonstrate that there is a faster uptake and higher ^{137}Cs activity concentration into leg meat than into breast meat and faster release of radiocaesium after single and repeated (long-time) applications of artificially contaminated feed mixture with ^{137}Cs in concentrations as mentioned above.

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