clipped skin of the back 0·10 ml. of a 1 per cent solution of 9:10-dimethyl-1:2-benzanthracene (DMBA) in paraffin oil. The animals were killed 7 weeks after the beginning of the treatment, when they had received 14 applications of DMBA. As controls, 20 untreated animals of both sexes were killed at the same age of the experimental group. Bioassay of the 5-HT content of the skin and histological or ultra-violet examination of mast cells were performed according to the methods previously described[2].

In comparison with controls, a remarkable accumulation of mast cells was detected in the dermis of the painted area in all the treated animals. The mast cell reaction was practically comparable with that observed in previous investigations in mice, although less pronounced. The accumulating mast cells appeared smaller and less granulated than normal hamster mast cells and located mostly beneath the hyperplastic epidermis. However, when the sections were examined in ultra-violet light both the normal and reacting mast cells failed to exhibit any fluorescing property. Moreover, the determination of 5-HT skin level did not reveal any difference between control and treated animals, the values obtained being less than μgm/gm 0·08 in both groups.

These findings indicate that no production of 5-HT occurs in normal skin mast cells of hamsters as well as in mast cells appearing in the dermis during carcinogenic treatment in these animals. In skin carcinogenesis of mice, as already stated, the close parallelism between golden-yellow fluorescence of mast cells and high content of 5-HT in the skin suggested that the increased level of this compound was the factor responsible for the fluorescing properties acquired by the reacting mast cells. The results of the experiments recorded here give further support to this hypothesis, since in hamsters painted with DMBA neither increase of 5-HT nor appearance of fluorescence in the accumulating mast cells was observed in the skin. On the other hand, the lack of appreciable amounts of 5-HT in mast cells of DMBA-treated hamsters seems to indicate that this amine plays no significant part in the mast cell reaction developing in the course of chemical skin carcinogenesis.

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RADIOBIOLOGY

Cæsium-137 Content of Lambs

The cæsium-137 γ-activity of 10 lambs, which had been used previously to investigate some relationships between potassium-40 content and composition[1], was measured concurrently with potassium-40 γ-activity on the Los Alamos human counter[2]. The lambs averaged 88 lb. in live-weight and were purchased from a feed-lot at La Jara, in southern Colorado, in March 1960. The counting conditions have been described earlier[1]. The γ-counts from the upper and lower channel settings were entered on I.B.M. cards, and a computer tabulated and printed the cæsium results as μμc./*g* potassium[3]. Calculations were based on previously determined calibration curves for the counter.

The cæsium content of the 10 live lambs and their components are presented in Table 1. The increase in the cæsium/potassium ratio which was recorded after the lambs had been washed resulted from the removal of a large amount of potassium from the surface of the lambs by the washing process[1]. The results (Table 1) show that, when the cæsium-levels were converted to a per kilogram of tissue basis, little cæsium was removed by washing. Results indicate that the cæsium/potassium ratio in the washed lambs and their components was fairly constant, which would be expected as cæsium is metabolically similar to potassium[4]. This resulted in a higher concentration of cæsium per unit of muscular tissue than in the live lambs, as the lean tissue also has a higher concentration of potassium[1].

Table. 1. Cæsium-137 Content of Ten Live Lambs and their Components

Item	Mean	*S.D.*	Range
Live unwashed (μμc. cæsium-137/g K)	58·0	10·6	41·8–74·5
Live washed (μμc. cæsium-137/g K)	84·8	17·9	60·2–121·0
Dressed carcass (μμc. cæsium-137/g K)	81·5	23·0	43·0–122·4
Non-carcass components (μμc. cæsium-137/g K)	96·8(9)*	59·4	25·9–189·2
Separable lean (μμc. cæsium-137/kg K)	79·5	18·1	59·1–107·7
Live unwashed (μμc. cæsium-137/kg tissue)	155·4	24·1	126·3–182·8
Live washed (μμc. cæsium-137/kg tissue)	148·7	21·4	118·8–183·3
Separable lean (μμc. cæsium-137/kg tissue)	236·6	54·3	167·8–323·1

Counts for separable fat and bone on the lower channel were so close to background that several of the samples were estimated to have a negative cæsium content and all results on these tissues were obviously inaccurate. For this reason they have not been reported.
* Mean is based on 9 observations as one negative value was discarded. If a value of zero is used for the negative observation, the mean becomes 87.

The levels of cæsium reported are similar to those found in cattle tissue in 1957–59 in the United States[5], in pigs and calves prior to 1962 in Canada[6,7] and in human beings prior to 1961, largely from the United States[4]. However, the values are very much lower than those observed in Norway and Sweden for beef[8,9], horse[9], mutton[9], pork[9], reindeer[9,10], and, to a lesser extent, man[10,11]. As all these observations were made prior to the recent nuclear weapons test series of the U.S.S.R. and the United States beginning in August of 1961, it would appear that these levels resulted from earlier weapon tests. Differences may be due to different world fall-out patterns, time interval from previous atomic tests and different eating habits.

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