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Morphological changes in taste buds of the fungiform papillae after a single dose of x-ray irradiation in rats

Rosnah Binti Zain, *University of Malaya*
Hanks C. T.

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Abstract:

The qualitative and quantitative changes occurring in the taste buds of the fungiform papillae of male Sprague-Dawley rats (aged 51-125 days old) after x-ray irradiation were studied. A single dose of 2000 Roentgen (R) was delivered and observations were made at 0, 3, 7, 14, 21 and 30 days after x-ray irradiation. The changes in taste bud morphology were interpreted first as degenerative and then as regenerative at various stages of the study. The degenerative process appeared at about the third day and reached a peak at 7 days. Regeneration then began after a further week and the taste buds appeared mature at about 30 days. While the number of fungiform papillae remained constant throughout the study, there was a marked loss of taste buds on these papillae at 7 days. At 14 days, the number of taste buds increased from this low level, and by 30 days the number approached the control values. Initial taste bud loss could be attributed to a direct irradiation damage leading to taste bud cell desquamation combined with a concomitant mitotic inhibition of the stratum germinativum.

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