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Differences in dose-effect curves for UV-induced reverse mutations at two different loci

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Differences in dose-effect curves for UV-induced reverse mutations at two different loci

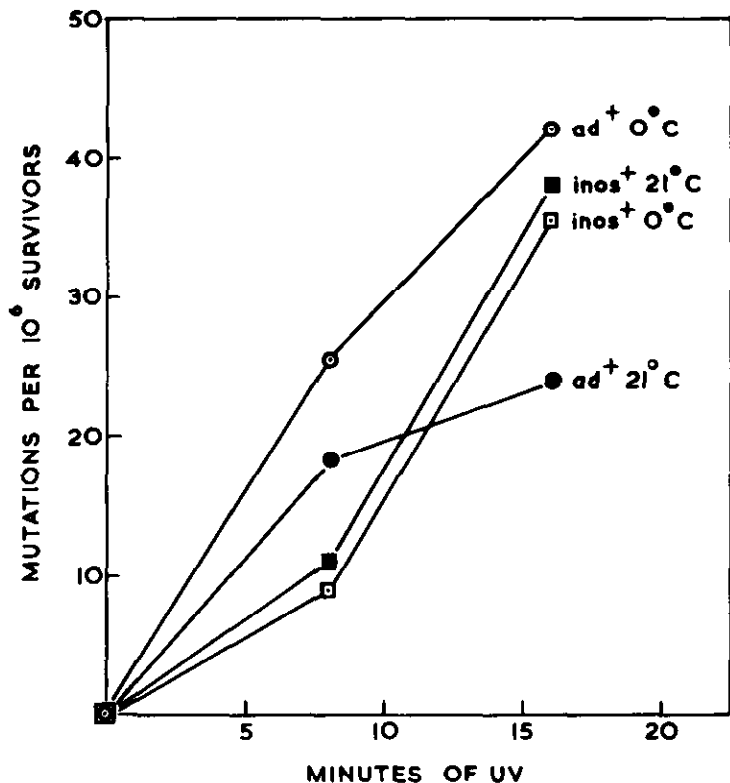
Abstract

Differences in dose-effect curves for UV-induced reverse mutations at two different loci

Auerbach, C., B. J. Kilbey and G. Kølmark. Differences in dose-effect curves for UV-induced reverse mutations at two different loci.

or sites. Mutation tests with low doses of UV have shown this to be an oversimplified interpretation, the difference between the loci being one of dose-effect curve rather than of general sensitivity to UV-treatment. While the curve for inos-reversions rises steeply with dose, that for ad-reversions is flatter and levels off at intermediate doses. The table shows the ratio of inos-reversions to ad-reversions in 3 experiments in which the dose was controlled by exposure time. Since the number of spores was not the same in all experiments and series, these ratios are not strictly comparable, but the increase within each experiment and in the mean values is consistent and clear.

In the doubly auxotrophic strain K3/17 ad-3A (38701) inos (37401), treatment with moderate doses of UV usually yields about twice as many inos-reversions as ad-reversions, and this has been considered as evidence for a difference in UV-sensitivity between the two loci



Ratio of inos-reversions to ad-reversions

Exposure time in min.	Experiment			Mean
	I	II	III	
1		.5	.8	.65
2	1.0	.9		.95
3			1.1	1.1
4	1.9	1.7		1.8
6			2.0	2.0
8	3.0	2.1		2.6

At low temperatures the divergence between the dose-effect curves for the two loci becomes emphasized and the point of intersection shifts to higher values; this is due to the pronounced response of the ad-reversions and the very slight response of the inos-reversions to temperature. (see graph).

Possible interpretations take account of differences between the loci in (a) photo-repair during treatment (our UV source is not monochromatic), (b) dark repair after treatment, the period available for dark repair presumably increasing with time of treatment. These interpretations will now be tested. ---
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