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Response of two loci to interaction treatment

C. Auerbach

B. J. Kilbey

G. Kolmark

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Response of two loci to interaction treatment

Abstract

Response of two loci to interaction treatment

Auerbach, C., B. J. Kilbey and G. Kølmark
 Response of two loci to inter-
 action treatment.

The introduction into the cell of a mutagenic agent and the emergence of a mutant colony are connected by a pathway which includes, among other processes, stabilization or decay of potential mutations and the

successful emergence of the mutant phenotype. Most mutagens, in addition to initiating changes in DNA, are likely to affect some of these ancillary processes. Successive treatments with two mutagens can be used for studying how one of them affects the mutagenic pathway of the other. Experiments of this kind, started several years ago in Oak Ridge (Kølmark & Auerbach, MGB. 17) and now resumed, suggest that in the doubly auxotrophic strain K3/17ad-3A (38701); inos (37401) the mutagenic pathways for reverse mutations at the two loci differ. The results on which this conclusion is based are shown qualitatively in the table, in which DEB stands for diepoxybutane, + for more than additive, - for less than additive. The two cases noted as "variable" are under analysis; possibly variability is correlated with the relative strengths of the two treatments.

No. of expts.	Successive treatments	<u>ad</u> -reversions	<u>inos</u> -reversions
Many	DEB + UV	+	variable (never +)
	UV + DEB	variable	-
2	DEB + HNO ₂	+	-
	HNO ₂ + DEB	+	-
1	HNO ₂ + UV	+	-
	UV + HNO ₂	+	-

Malling et al. (Int. J. Rad. Biol. 4, 328) obtained similar results with interaction treatment of the same strain by UV and CH₂O. At present, our analysis aims at determining at what points in the mutagenic pathways these interactions take place.

The two loci differ strikingly in their patterns of mutagen specificity. Our results suggest that, at least in part, this may be a reflection of differences in mutagenic pathways. --- Mutagenesis Research Unit, Institute of Animal Genetics, Edinburgh, Scotland.