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H. Malling

S. Frederiksen

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Abstract

Induction of reversions in *Neurospora crassa* by nitrous acid

Malling, H. and S. Frederiksen.
Induction of reversions in *Neurospora*
crassa by nitrous acid.

To study the induction of reversions with nitrous acid Kølmark's K 3/17 strain with a double requirement for adenine (ad-3-A mutant No. 38701) and inositol (mutant No. 37401) has been used. A simultaneous

measurement of the reversion rates of the adenine and inositol alleles is possible in this system (Westergaard, *Experientia* 13:224, 1957). The technique for scoring the reversions was that described by Kolmark (*Hereditas* 39:270, 1953) except for the following modifications: The conidia were plated on the surface of the medium instead of being suspended in the melted medium, and N. minimal instead of Westergaard's minimal (P-minimal) was used.

For treatment with nitrous acid the conidia are suspended in 0.05 M sodium acetate at pH 4.5 and one part of freshly prepared NaNO_2 solution of the appropriate concentration is added to three parts of conidial suspension.

Table 1

Treatment	Per cent survival	Reversions counted		Reversions pr 10^6 survived	
		<u>ad+</u>	<u>inos+</u>	<u>ad+</u>	<u>inos+</u>
Control	100	1	1	0.1	0.1
NaNO_2 0.01 <u>M</u> pH 4.5 50 min.	88	17	2	2.7	0.2
" 0.012 <u>M</u> " " " "	86	21	6	3.4	0.9
" 0.014 <u>M</u> " " " "	92	41	3	6.3	0.4
" 0.016 <u>M</u> " " " "	83	32	7	5.4	1.1

105×10^6 conidia treated in each experiment. Per cent initial viable = 18.2.

Table 1 summarizes the results obtained after treatment with increasing concentrations of NaNO_2 for 50 minutes. No significant decrease of survival has been obtained with these treatments. The reversion frequency of the adenine allele seems to increase linearly with concentration. No significant increase of the reversion rate of the inositol allele has been found.

Table 2

Treatment	Per cent survival	Reversions counted		Reversions pr 10^6 survived	
		ad+	inos+	ad+	inos+
NaNO ₂ 0.02 M pH 4.5 2 min.	100	0	4	0	0.1
" " " " " 15 "	117	0	5	0	0
" " " " " 30 "	82	7	6	0.6	0.1
" " " " " 45 "	25	34	3	8.3	0.2
" " " " " 60 "	8.2	14	0	12.3	0
" " " " " 75 "	1.9	8	2	26	3

196×10^6 treated in each experiment. Per cent initial viability = 17.4.

In Table 2 the effect on survival and reversion frequency after treatment with 0.02 M NaNO₂ for various times is presented. The inactivation curve for the conidia with increasing time has the sigmoid shape found with other mutagenes. A non-linear increase of the reversion frequency is found for the adenine allele, whereas practically no reversions of the inositol allele appeared. ---Institute of Genetics, University of Copenhagen, Copenhagen, Denmark.