

Enzyme activities in aged conidia of N. crassa

The results, summarized on Table 1, show that the decline in activities of the five enzymes investigated until now, shows ageing patterns which do not parallel the decline in viability of the cells. Evidently, the aged conidia are able to overcome the shortage of vital enzymes and germinate, since a drastic diminution of important enzyme activities (the presence of undetectable vestigial activities cannot be ruled out) like those of aspartate transcarbamylase and NADP-dependent glutamate dehydrogenase are not reflected in a similar loss in viability. These results do not exclude the possibility that one or more key enzymes could show activity variations paralleling the decay in survival, and the central question whether the diminution of enzyme activity (or activities) is a cause or an effect of the ageing process, remains open.

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As a part of a broader program directed toward a better understanding of the macromolecular changes occurring during the ageing process, several enzyme activities were determined in young (7- to 16-day-old) and aged (24- and 28-day-old) conidia of the wild type strain 74-OR23-1A (FGSC #987).

Table 1. Viability and Enzyme Activities in Aged Conidia.

	Age of the conidia	
	24 days	28 days
Viability:	46 %	35 %
Enzyme:		
Aspartate transcarbamylase (EC 2.1.3.2)	2	> 0.2
Ornithine transcarbamylase (EC 2.1.3.3)	50	52
Glutamate dehydrogenase- (NADP) (EC 1.4.1.4)	20	> 0.1
Glucose-6-phosphate dehydrogenase (EC 1.1.1.49)	65	65
6-phosphogluconate dehydrogenase (EC 1.1.1.44)	80	80

The absolute viability of young conidia was $65 \pm 5\%$ in our culture conditions and in different experiments. Activities are expressed as percentage of the values corresponding to young conidia (100%). Growth, conidiation and ageing occurred in 250 ml erlenmeyer flasks containing 50 ml of Vogel's solid minimal medium. The temperature was 25°-27° C. Harvesting, washing with distilled water and grinding of the spores were done at 0°-4° C. Enzyme activities were determined in crude extracts by standard assay methods.