Murayama, T. and T. Ishikawa. Temperature sensitivity of a sorbose-resistant mutant.

We reported on the mutant of Neurospora crassa, T9, which showed a long lag phase of growth, considerably reduced specific activity of extracellular glucoamylase (whose Km and heat sensitivity were the same as those of the wild type but whose molecular weight was larger), high activity of extracellular acid phosphatase, and resistance to the effect of sorbose (Murayama and Ishikawa 1973 J. Bacteriol. 115: 796). The locus responsible for the various characteristics of strain T9 is tentatively called sor(T9). The sor(T9) gene is located 5 units from the centromere and 6 units proximal to the mating type locus on the left arm of linkage group I. We report here on partial recovery of sor(T9) mutant phenotype at 35° C.

A characteristic of the growth manner of strain T9 in glucose minimal medium at both 25° C and 35° C was a longer lag phase than that of the wild type (Fig. 1). However, mycelia of strain T9 grown at 35° C produced significantly higher amounts of extracellular glucoamylase throughout the culture time than those grown at 25° C. No such difference was found in the wild type (Fig. 2). At the same time, strain T9 which was sorbose-resistant at 25° C was sensitive to sorbose at 35° C; that is, T9 grew filamentous on sorbose-agar medium as on glucose-agar medium at 25° C, but grew colonially on the sorbose agar medium at 35° C.

The pleiotropic characteristics of the sor(T9) mutant as described above suggest that the sor(T9) locus is not the structural gene for glucoamylase or acid phosphatase but could be a gene concerned with cell wall or membrane synthesis.

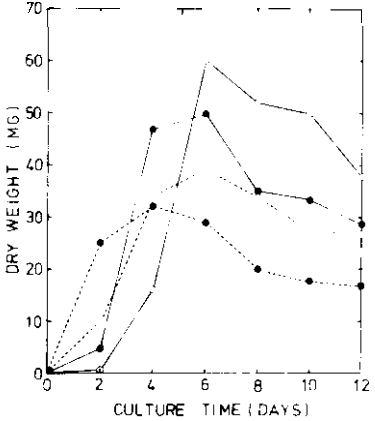

Figure 1. Growth of the wild type (●) and strain T9 (○) in minimal medium containing 1.0% glucose at 25° C (solid line) and 35° C (broken line). Growth is indicated as milligram dry weight of mycelia grown in a 100 ml flask containing 15 ml medium.

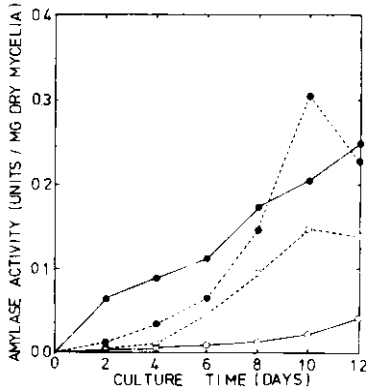

Figure 2. Glucoamylase activity found in culture filtrates of the wild type (●) and strain T9 (○) at 25° C (solid line) and 35° C (broken line). Culture filtrates were prepared from the same cultures as those described in Figure 1. Glucoamylase activity was measured according to Murayama and Ishikawa (1973 J. Bacteriol. 115: 796).

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