

### Pathogenicity of Sorghum Ergot Fungus (*Sphacelia sorghi* McRae)<sup>1</sup>

During our pathogenicity studies, we found that the conidia of *Sphacelia sorghi* from artificial cultures were inferior in pathogenesis on sorghum florets compared to the conidia from the honeydew of the infected spikelets. In order to compare their relative pathogenicity, conidial suspensions were prepared from 15-day-old cultures maintained on KIRCHHOFF'S<sup>2</sup> medium, as well as from the

germination, while the germinability of the honeydew conidia was reduced when they were washed free of the honeydew. In the case of other ergotial fungi also, the conidia from artificial cultures were shown to be less pathogenic than the conidia from the infected spikelets<sup>3,4</sup>. The nature of the stimulatory substance in the honeydew of sorghum ergot fungus remains to be studied.

Relative virulence and germinability of conidia of *Sphacelia sorghi* from the honeydew and the artificial cultures

Nature of conidia	% of infection	Nature of conidia	% of spore germination
Conidia from artificial cultures	22.5	Unwashed honeydew conidia (diluted suspension)	77.1
Honeydew conidia	87.5	Washed honeydew conidia	30.3
Conidia from artificial cultures + honeydew extract	61.5	Unwashed conidia from artificial cultures	33.8
Uninoculated inflorescence	0.0	Washed conidia from artificial cultures	30.5
		Washed conidia from artificial cultures + honeydew extract	54.5

honeydew of the infected spikelets, and sprayed on the unpollinated inflorescences of msCK 60-A sorghum variety. The inflorescences were covered with selfing-bags to provide adequate humidity. After 20 days, the percentage of infection was recorded by counting 2000 spikelets at the top of the inflorescence.

The results revealed that the conidia from artificial cultures were less pathogenic compared to the honeydew conidia. Therefore, presence of some stimulatory substance in the honeydew was suspected. To ascertain this, a spore suspension from artificial cultures was prepared in a conidium-free honeydew extract obtained by repeated centrifugation and used for inoculation on sorghum florets.

It was found that the virulence of conidia from artificial cultures was increased by the addition of honeydew extract prepared from the infected spikelets, indicating the presence of some stimulatory principles in the honeydew. This was further confirmed by spore germination studies also. Addition of honeydew extract to the washed conidia from artificial cultures increased the spore

*Zusammenfassung.* Die Konidien einer in vitro aufgezogenen Kultur von *Sphacelia sorghi* sind weniger infektiös als die Konidien aus dem Honigtau der auf Hirse gewachsenen Pilze. Es wird daher eine Substanz im Honigtau vermutet, welche die Keimung der Konidien-sporen fördert.

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<sup>2</sup> H. KIRCHHOFF, Zentbl. Bakt. Parasitkde., Abt. II, 77, 310 (1929).

<sup>3</sup> A. ST. GARY, Nature 177, 91 (1956).

<sup>4</sup> K. DWARAKANATH REDDY, C. V. GOVINDASWAMY and P. VIDHYASEKARAN, Madras agric. J. 56, 367 (1969).

### Temperature Sensitivity in the Respiratory-Deficient Mutants of Yeast (*Saccharomyces cerevisiae*)

In connection with the study of cancer cells as temperature-sensitive mutants<sup>1</sup>, and analysis of their heat sensitivity with the aid of microbial models of cancer cells<sup>2</sup>, an investigation of temperature sensitivity in the respiratory-deficient mutants of yeast is of considerable interest.

Yeast mutants with impaired respiration and enhanced glycolysis are more heat sensitive than the original parent cells<sup>3</sup>. In these experiments yeasts were grown on nutrient agar plates under aerobic conditions, suspended in sterile distilled water and heated at 54°C for various intervals of time. The curves of survival for the normal strain and its respiratory-deficient mutants were compared and it was recorded that the mutant strain showed greater heat sensitivity than the wild type. These observations were confirmed in the work with another strain of yeast, *Saccharomyces cerevisiae* S (parent culture), and 2 respiratory-deficient mutants (c and d) derived from it<sup>1</sup>.

In the course of these studies we observed that respiratory-deficient mutants of yeast are temperature

sensitive only when grown under aerobic conditions. In this work, parent culture *S. cerevisiae* strain S and 2 respiratory-deficient mutants c and d were grown under anaerobic conditions upon the nutrient medium containing 10% of beerwort and 0.6% of glucose, as described previously<sup>4</sup>. For aerobic cultivation the same medium was used in shaking flasks. Yeast cells in the logarithmic phase of growth were washed on the centrifuge and suspended in m/15 phosphate buffer at pH 5 as previously described<sup>4</sup>.

<sup>1</sup> G. F. GAUSE, E. M. NETYKSA, L. I. KUSOVKOVA and T. I. SELENEVA, Izvestia Acad. Sci. USSR, Ser. biol. 6, 802 (1968).

<sup>2</sup> G. F. GAUSE, *Microbial Models of Cancer Cells* (North-Holland, Amsterdam 1966).

<sup>3</sup> F. SHERMAN, Expl. Cell Res. 11, 659 (1956).

<sup>4</sup> G. F. GAUSE, G. V. KOCHETKOVA, L. E. SARUKHANOVA and G. B. VLADIMIROVA, Microbiologia, Moscow 36, 918 (1967).