

vulsions have often been observed in decorticated animals.¹⁻⁶ Hence, we may conclude that the second clonic stage occurs without any active participation of the cortex. The study of our motion picture records has demonstrated that the average major seizure⁷ corresponds closely to the tonic and second clonic stage of the metrazol convulsion. Our electroencephalographic records show that action potentials of a distinct epileptic pattern can be obtained from the cortex during the tonic and following clonic stage.

This raises the question of whether these electroencephalograms are really the expression of some abnormal cortical activity which causes the epileptic attack or whether they are only an accompanying cortical phenomenon indicating that the cortex is influenced by the same abnormal activity of subcortical structure which is the basis of the epileptic attack. This question is of fundamental importance for all interpretations which have been or will be drawn from the use of electroencephalograms in the study of the pathophysiology of the epileptic attack. We are continuing our investigations of this question by recording simultaneously the movements and the electroencephalogram in patients and in animals having variously localized lesions of the brain, during metrazol seizures.

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Effect of 1,2,5,6-Dibenzanthracene on *Fusarium lini*.

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In addition to being able to initiate malignant growth, the carcinogenic hydrocarbons have been shown to stimulate cell division of certain microorganisms. Since it has been postulated that cancer may be associated with an abnormal glucose metabolism, it was

¹ Marineseo, G., Sager, O., and Kreindler, A., *Revue Neur.*, 1932, **1**, 1329.

² Muncie, W. S., and Schneider, A. J., *Bull. Johns Hopkins Hosp.*, 1928, **42**, 77.

³ Pike, F. H., and Elsberg, C. A., *Am. J. Physiol.*, 1925, **72**, 327.

⁴ Pike, F. H., Elsberg, C. A., McCulloch, W. S., and Chappell, M. N., *Arch. Neur. and Psychiat.*, 1930, **23**, 847.

⁵ Pike, F. H., Elsberg, C. A., McCulloch, W. S., and Chappell, M. N., *Am. J. Psychiat.*, 1930, **10**, 567.

⁶ Schoen, R., *Arch. f. exp. Path. u. Pharm.*, 1926, **113**, 257.

⁷ Wilson, S. A. K., *Handbuch d. Neurol.*, 1935, **17**, 1.

thought of interest to study the effect of a typical carcinogenic hydrocarbon on the growth and glucose utilization of *Fusarium lini*. This fungus has been shown to grow well on a medium composed of mineral salts and glucose as the only source of carbon producing a typical alcoholic fermentation.¹

The carcinogenic hydrocarbon selected for this study was 1,2,5,6-dibenzanthracene. The culture medium had the following composition:

NH ₄ NO ₃	1.00 gm.
MgSO ₄	0.25
KH ₂ PO ₄	0.50
Glucose	20.00

Distilled water to make 1,000 cc.

Since in preliminary tests the above hydrocarbon had no effect on the growth of *Fusarium lini* grown on the above medium, it was felt that this might be due to the low solubility of the hydrocarbon in the medium. Therefore in the work here reported a water-soluble oxidation product of the hydrocarbon was used. This was prepared by a method similar to that of Boyland and Boyland² as follows:

A solution containing 0.123 gm. of 1,2,5,6-dibenzanthracene, dissolved in a small amount of anhydrous benzene, was exposed for 1¼ hours to the rays from a mercury arc ultraviolet light source. The solution was exposed directly to the light by being placed in a thin layer in one-half of a large Petri dish. From time to time benzene was added to replace that lost by evaporation. Finally the benzene was evaporated and the residue irradiated for 15 minutes. This residue was then extracted with several small portions of water, the washings filtered and the volume made up to 100 cc. This extract was used in the subsequent work.

A series of 16 Erlenmeyer flasks was prepared, each flask containing 100 cc. of medium. Eight of the flasks contained in addition one cc. of the water extract described above. After heat sterilization each flask was inoculated with a spore-mycelium suspension of *Fusarium lini*. The flasks remained at room temperature throughout the experiment. The flasks were arranged in pairs, with and without hydrocarbon. One pair was analyzed immediately for glucose by means of a saccharimeter. Sugar values are expressed as saccharimeter readings using a 400 mm. tube. At frequent intervals a pair of flasks was removed and the contents filtered through a Gooch crucible. A saccharimeter reading was taken on the filtrate,

¹ Anderson, A. K., *Minnesota Studies in Plant Science. Studies in the Biological Sciences*, 1924, No. 5, pp. 237-280.

² Boyland, E., and Boyland, M. E., *Biochem. J.*, 1934, **28**, 244.

the mycelium being washed, dried and weighed. In all, three series were run. Similar results were obtained in all series. The results of one series are shown graphically in Fig. 1.

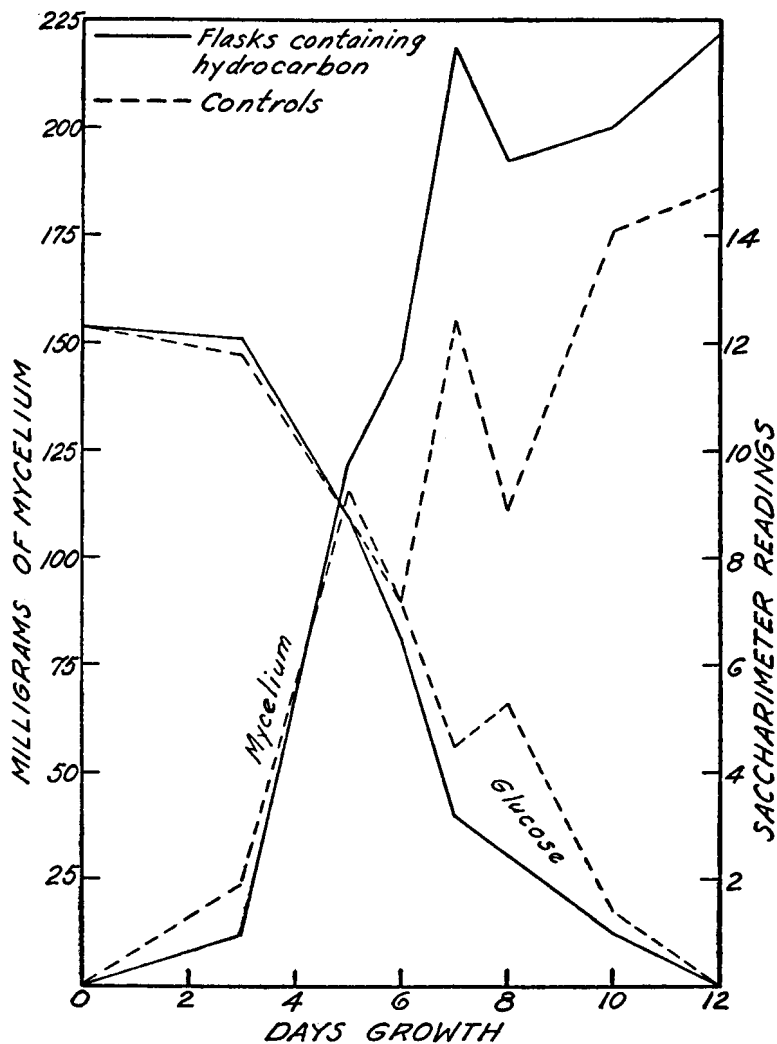


FIG. 1.

Showing mycelium production and glucose utilization of *Fusarium lini* as influenced by 1,2,5,6-dibenzanthracene.

An examination of the data presented shows that water-soluble derivatives of 1,2,5,6-dibenzanthracene after an initial inhibiting period were effective in stimulating the activities of *Fusarium lini* as evidenced by an increase in the weight of mycelium and a more rapid utilization of glucose.