

Effect of Relative Humidity on Gross Morphology of Certain Pathogenic Fungi.*

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In this study the effect of relative humidity under controlled air velocity and temperature on gross morphology of certain pathogenic fungi is determined.

It has been shown that ratio of constituents of mediums¹ and availability of oxygen² influence colony morphology. Variation in microscopic morphology with change in humidity has been studied repeatedly³ but gross morphological changes under conditions such as used have not been recorded.

With high humidity one expects a less powerful nutrient gradient to the surface and a lesser tendency to surface growth and with low humidity the reverse. Such variation exists in nature in regions where there are deep and shallow root vegetation.⁴

To study the effect of humidity, organisms were grown on a medium producing a predominantly subsurface growth (1% d-glutamic acid, 4% dextrose, 1½% agar, pH 5.6)⁵ and one producing a predominantly surface growth (Sabouraud's proof medium—1% peptone, 4% dextrose, 1½% agar, pH 5.6).

Cabinets† used for growth were placed in a room having a refrigeration control set at 70°F. An 80% relative humidity was obtained by circulating in a scrubbing tower through which air passed to the cabinets a saturated technical sodium chloride solution and a 97% by substituting tap water. Air velocity was set at 6 ft./min.

The following pathogenic fungi and 2 nonpathogenic saprophytes, *Lichthemia sp.* and *Scopulariopsis brevicaulis*, were studied: *Acho-*

* Contribution No. 108 from the Department of Biology and Public Health, Massachusetts Institute of Technology, Cambridge, Mass.

¹ Williams, John W., *Urol. and Cut. Rev.*, 1937, **41**, 117, 198.

² Williams, John W. To be published.

³ Davidson, A. M., and Gregory, P. H., *Canad. J. Res.*, 1934, **10**, 373.

⁴ Salisbury, E. J., *Science Progress*, 1934-35, **29**, 409.

⁵ Williams, John W., *Science*, 1936, **83**, 396; *Urol. and Cut. Rev.*, 1937, **41**, 117, 198; *Arch. Derm. and Syph.*, 1937, **36**, 581.

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rion schoenleinii, *Acladium castellani*, *Candida candida*, *Endodermophyton indicum*, *E. tropicale*, *Endomyces capsulatus*, *E. dermatitidis*, *Epidermophyton cruris*, *E. inguinale*, *E. rubrum*, *Glenospora Gammeli*, *Geotrichum Bachmann*, *Indiella americana*, *Microsporon Audouini*, *M. felineum*, *M. gypseum*, *Monosporium apiospermum*, *Monilia albicans*, *Oospora humi*, *Sporotrichum Schenckii*, *Trichophyton balcanicum*, *T. crateriforme*, *T. decalvans*, *T. granulosum*, *T. gypseum*, *T. gypseum-asteroides*, *T. gypseum-lacticolor*, *T. interdigitale*, *T. louisianicum*, *T. niveum*, *T. purpureum*, *T. sulfureum*, *Willia anomala*. Observations were made on growths kept in the cabinets 30 days.

Duplicate tubes containing 10 cc. of mediums used were placed in cabinets at 80 and 97% r.h., 70°F., a.v. 3 ft./min. and 12 ft./min. The original weight of the mediums varied from 9.2 to 9.5 gm. The 38-day weight loss varied from 650 to 900 mg. Mediums at 80% r.h., a.v. 12 ft./min. showed greatest loss in weight and those at 97% r.h., 3 ft./min. least. The second highest weight loss was at 97% r.h., a.v. 3 ft./min.

In conclusion, examination of 30-day growths failed to show difference attributable to difference in humidity. Variation of nutrient gradient and evaporation was not sufficient to influence surface or subsurface tendency of growths.

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Dinitrophenol Hyperglycemia.

II. Its Prevention by Section of Splanchnic Nerves.*

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In a study of the hyperglycemia produced by 2-4 dinitrophenol (DNP), Hall, Brown and Sahyun¹ suggested that its mechanism might be the stimulation of sympathetic glycogenolytic centers of the brain stem by local cellular anoxemia or acidosis. Wishnovsky, Kane, Schlevin and Byron² have criticized this suggestion, on the

* We wish to acknowledge the assistance of Messrs. C. A. Brown, George Fraser, and Julian Edmond during the earlier phases of the work on this problem.

¹ Hall, V. E., Brown, C. A., and Sahyun, M., *Proc. Soc. Exp. Biol. and Med.*, 1933, **31**, 380.

² Wishnovsky, M., Kane, A. P., Shlevin, E. L., and Byron, C. S., *Arch. Int. Med.*, 1935, **56**, 374.