NO INHIBITION OF PIGMENT PRODUCTION BY DIPHENYLAMÍNE IN CANDIDA PULCHERRIMA (LINDNER)WINDISCH

By

J. ZSOLT and L. FERENCZY

Institute for Plant Physiology of the University, Szeged
(Received, 18, June, 1958)

Demonstration of the carotenoid nature of pigments of red yeasts with simple method so far has not been possible. Methods described up to the present (1, 2, 3) are unsatisfactory and »we have been obliged to rely merely on the result of a visual observation« (3).

The inhibition of the synthesis of carotenoid pigments by diphenylamine (DPA) demonstrated by several authors in bacteria, fungi and yeasts (4, 5, 6, 7) seems to be a reliable, although indirect solution of this problem if the synthesis of non-carotenoid pigments of yeasts are not inhibited by DPA. As non-carotenoid yeast pigments alone the pigments of Candida pulcherrima can be taken into consideration. The pink pigments of deficient mutants or that of normal yeasts on deficient substrate do not occur in the taxonomical practice.

4 *Candida pulcherrima* strains, 5 *Rhodotorula species*, 2 *Sporobolomyces* species and *Dioszegia hungarica* (8) were investigated on a sucrose-yeast autolysate agar (5 g $(NH_4)_2SO_4$; 1 g KH_2PO_4; 0,5 g $MgSO_4 \cdot 7H_2O$; 0,1 g $CaCl_2 \cdot 2H_2O$; 10 g sucrose, 10 ml yeast autolysate, and 20 g agar in 1 l tap water) with different quantities of DPA. Cultures were incubated at 28 °C (*Dioszegia hungarica* at 20 °C) for 7 days. The colour of the cultures are shown in the table:

As it is shown, pigment production of *Torulopsis pulcherrima* was not inhibited by 20 p. p. m. DPA. At the same time the *Rhodotorula* species and *Sporobolomyces pararoseus* develop white colonies. There are some differences in the susceptibility to DPA; *Rhodotorula mucilaginosa* is considerably resistant, whereas *Dioszegia hungarica* and *Sporobolomyces roseus* are extremely susceptible.

Investigations of the cause of this differences and on the mechanism of the DPA-inhibition are in progress.

name	DPA concentration p. p. m.				
	no	20	40	60	80
Candida pulcherrima (Lind.) Windisch strain 1.	rose	rose	rose	—	—
strain 2.	rose	rose	rose	—	—
strain 3.	rose	rose	rose	—	—
strain 4.	rose	rose	rose	—	—
Rhodotorula minuta (Saito) Harrison	red	white	white	—	—
Rhodotorula gracilis Rennerfelt	red	white	white	—	—
Rhodotorula mucilaginosa (Jörg.) Harrison	red	white	white	white	—
Rhodotorula flava (Saito) Lodder	cream	white	—	—	—
Rhodotorula rubra (Demme) Lodder	red	white	white	—	—
Sporobolomyces pararoseus Olson et Hammer	rose	white	white	—	—
Sporobolomyces roseus Kluyver et van Niel	red	—	—	—	—
Dioszegia hungarica Zsolt	red	—	—	—	—

— = no growth

References

(1) *Lodder, J.:* Die anaskosporogenen Hefen, I. Hälfte. Verhandel. Koninkl. Akad. Wetenschap. Afd. Natuurkunde, sect. II. 32, 1 (1934).
(2) *Mrak, E. M., Phaff, H. J., MacKinney, G.:* A simple test for carotenoid pigments in yeasts. J. Bact. **57**, 409 (1949).
(3) *Lodder, J., Kreger van Rij, N. J. W.:* The yeasts. Amsterdam. (1952).
(4) *Goodwin, T. W., Osman, H. G.:* Biochem. J. **53**, 541; **56**, 222 (1953, 1954).
(5) *Turian, G.:* Carotenoids et differentiation sexuelle chez Allomyces. Experientia **8**, 302 (1952).
(6) *Cohen-Bazire, G., Stanier, R. Y.:* Specific inhibition of carotenoid synthesis in a photosynthetic bacterium and its physiological consequences. Nature **181**, 250—252 (1958).
(7) *Schlechta, L., Gabriel, O., Hoffmann—Ostenhof, O.:* Separation of carotenoid synthesis from fat synthesis in *Rhodotorula gracilis* by diphenylamine. Nature **181**, 268—269 (1958).
(8) *Zsolt, J.:* A new yeast: *Dioszegia hungarica* nov. gen. et. sp. Botanikai Közlemények **47**, 63—66 (1957).