Chemistry of Natural Compounds, Vol. 45, No. 3, 2009

MELANIN-SYNTHESIZING ABILITY OF ISOLATE FROM PLANT ORGANS OF ZAAMIN PRESERVE

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UDC 579.6:663.12

Studies of so-called "black yeasts," which are excedingly interesting due to their exclusive ability to synthesize melanin, have comparatively recently begun. Melanin has recently been used successfully in medicine, pharmaceutics, and the agricultural industry [1-4].

Our goal was to isolate and study certain properties of the pigment of the local strain of black yeast *Aureobasidium* sp. L1.

During an investigation of the microbial flora of Zaamin Preserve, which is situated on the northern slopes of Turkestan Ridge at a height of >2,300 m above sea level and has unique natural conditions, we isolated from flowers of *Berberis vulgaris* an epiphyte culture with signatures characteristic of black yeasts [5-8].

A study of the morphological and culture properties found that the isolated strain was capable of polymorphism. The young culture strain grown on agar media formed yeast-like shining point colonies with an even brown edge of viscous consistency. With time, the color of the colony changed to black and aerial mycelia formed. Septate hyphae in addition to budding yeast cells were observed. The strain grown in liquid medium formed a black precipitate. Thus, the studied properties of the isolated culture enabled us to assign it preliminarily to the genus *Aureobasidium*, designating it *Aureobasidium* sp. L1.

Considering the high demand for melanin drugs, the polyfunctionality of which enable it to be used to treat malignant neoplasms, drug addiction, and AIDS, the black yeast strain *Aureobasidium* sp. L1 isolated by us should be viewed as a promising subject for biotechnology development.

Epiphyte cultures of the black yeast were isolated by the literature method [3]. The morphological and cultural properties were studied as before [8].

A study of the pigment-forming process revealed a direct dependence on temperature of pigment synthesis. The optimum temperature for colony growth and pigment formation was 15-20°C. The level of pigment synthesis decreased sharply with increasing temperature.

Alkaline extraction of microbial biomass obtained by cultivating *Aureobasidium* sp. L1 on wort under aerobic conditions for 10 d isolated a dark-brown colloidal compound [9].

The dry weight of the biomass was determined by drying to constant weight at 105°C. The total yield of the resulting pigment was >30% per g of dry weight. According to the literature, the melanin yield in active microbial cultures is 15-20%.

Spectrophotometric analysis of an alkaline solution of the resulting pigment in visible light showed that the spectrum was linearly correlated with that of melanin. A study of the solubility of the isolated pigment showed that it dissolved completely in bases and very poorly in acids. It was insoluble in water and organic solvents. Alkaline solutions of the isolated pigment were bleached upon prolonged storage in light or by treatment with H_2O_2, $KMnO_4$, potassium bichromate, and aqueous bromine.

A comparison of the results with available characteristics showed that the pigment isolated from the local strain of black yeast could be preliminarily identified as melanin.

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0009-3130/09/4503-0459

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