Screening of fungi that are capable of blue fungal colorant production

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Introduction

Certain fungi can produce colorants under the right conditions. These fungal colorants are **environmentally friendly** and can contain **useful properties**, making them a good alternative to harmful synthetic dyes. The fungal colorant industry remains rather underdeveloped despite all advantages, although it is emerging rapidly. More research is needed to optimize fungal colorant production and growth.

This project focusses on blue fungal colorant produced by the in-house collection species *TC*. Publications showed preliminary characterization of the various blue compounds from these species. This study is to screen for the right strains and condition to produce the colorants.

Materials & Methods

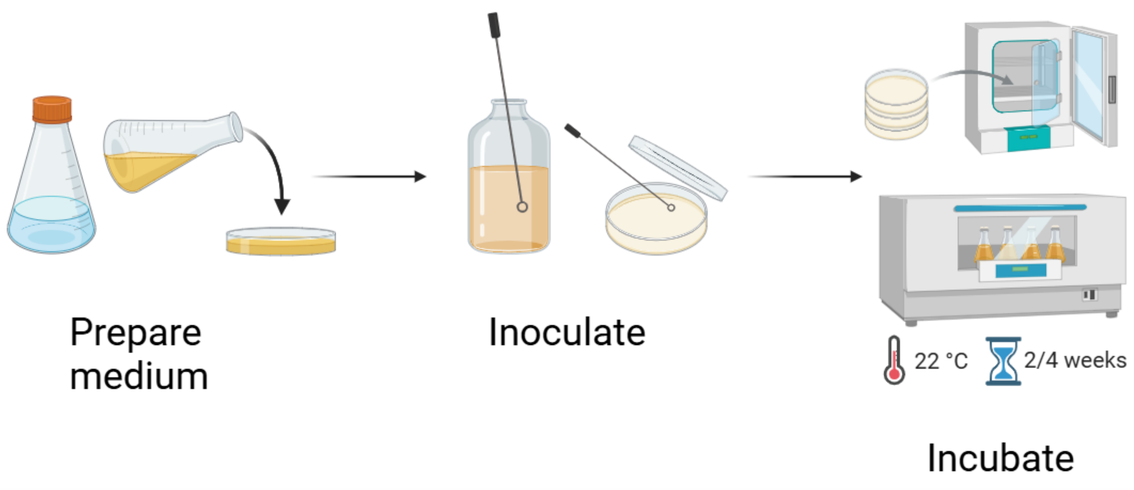

Figure 1. Workflow showing medium preparation, inoculation of the fungi, followed by incubation for growth.

Two different TC strains in this project were grown on potato dextrose medium on solid plates and liquid shaking culture. This medium got adjusted to **test the following variables** in each experiment: addition of wood chips, adjusted pH and exposure to light. Complex mediums such as orange juice was also tested. After inoculating the fungi on the medium, the samples were incubated at 22˚C for approximately 2 weeks.

Data was collected by **determining the growth rate** of the fungi and **assessing pigment production**. The growth rate on the plates was determined by measuring the growth diameter. For the liquid shaking cultures, the biomass concentration was determined by freeze drying the samples.

Results

TC grown on **potato dextrose medium** showed much growth, and blue pigmentation on strain A.

Figure 2. Growth of *TC* on potato dextrose plates after 14 days. The plate on the left is strain A showing blue pigment, and on the right is strain B.

Further tests demonstrated that strain A of *TC* showed significantly more pigmentation on medium adjusted to **pH 4**. Moreover, **exposure to daylight** led to more pigmentation of both strains.
Submerged culture did not show color formation.

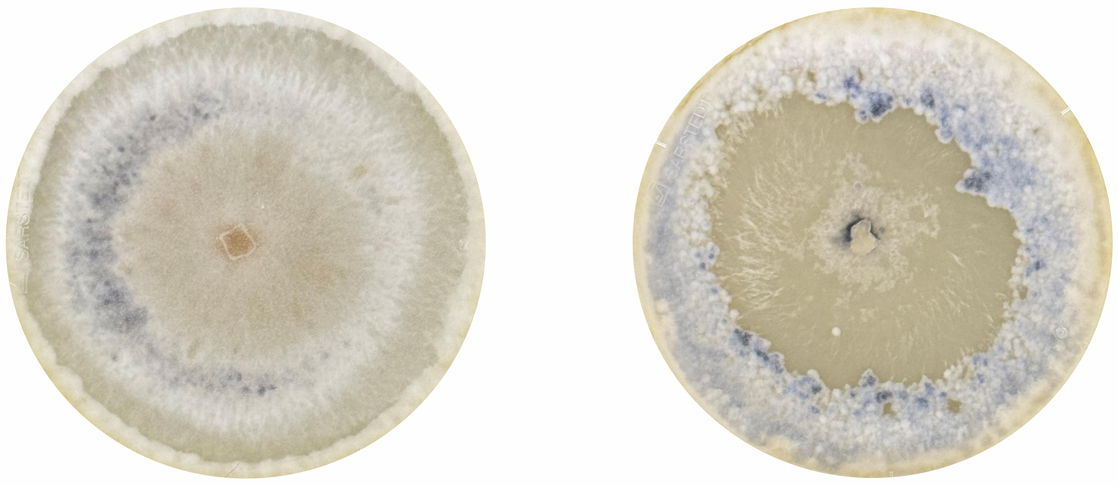

Figure 3. Growth of *TC* on potato dextrose plates exposed to daylight after 29 days. The plate on the left is strain A and right strain B.

Discussion & Conclusion

The growth rate of *TC* was not significantly impacted by pH and light. But adjusting the pH to 4, and exposure to daylight led to an increase in pigmentation.

In conclusion, it is recommended to lower the pH to approximately 4, and expose the samples to daylight during growth for increased pigmentation of *TC*. Colorants were not obtained on submerged culture. Further tests should be performed to obtain colorants on submerged culture.

References

1. Lawrinowitz S. et al. https://doi.org/10.1128/spectrum.01065-22 Journal of Clinical Microbiology (2022)

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