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VITICULTURE & ENOLOGY
UNIVERSITY OF CALIFORNIA DAVIS

Changes in mycelial structure of *Botrytis cinerea* induced by removal of the glucan matrix.

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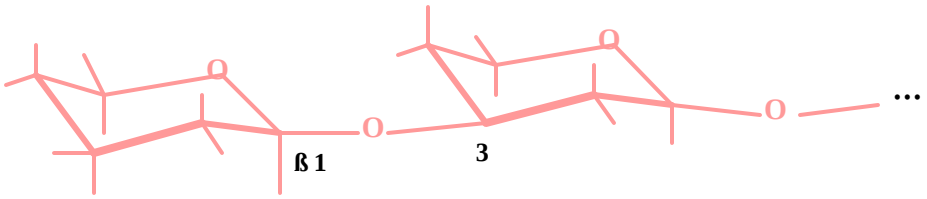
In: International Journal of Vine and Wine Sciences. 41(3):149-153. 2007

• *Botrytis cinerea* produces an external cellular matrix composed of glucan, a polymer of glucose. Researchers believe this matrix can play a role in: 1) regulating extra-cellular enzyme activity, 2) helping the spores adhere to the host, and 3) contributing to the virulence of the fungus, due to the presence of melanin in the glucan matrix.



ß(1-3) glucan

• ß-1,3-glucanase, an enzyme that is commercially available (Glucanex®), is able to break down this extracellular glucan matrix. The goal of this study was to determine the effect of glucanase on the ultrastructure of *Botrytis* hyphae, and its implications for *Botrytis* pathogenicity.

• The authors added the glucanase (0.2 mg/ml) to some of the wells in a plate containing a 10-day-old *Botrytis* spore culture. After adequate sample preparation for each type of microscopy, they examined samples with and without the glucanase under both a light microscope and an electron microscope to discover what cellular changes had taken place.

• **Results.** 1) Under the light miscroscope, the cultures that had grown in the presence of the glucanase presented a "fluffier" mycelium, with hyphae of larger diameter than the untreated cultures. 2) Under the electron microscope, the cells that had grown in the presence of the glucanase lacked an extracellular matrix ("naked" hyphae), and their cytoplasm was less dense, more vacuolated, and with more lipid-like inclusions than in the control (photos available in original text). Overall, the treated mycelia appeared stressed.

In conclusion, treatment with the glucanase produced *Botrytis* mycelia that was more stressed, and likely more sensitive to antifungal agents. As the authors note, glucanase is already considered a "pathogenesis-related protein", that is, a protein able to give plants protection against pathogens. Treatments involving glucanase may be a way of combating *Botrytis* infections, or increasing the efficacy of current anti-fungal agents. It would be interesting to find out next the "in vivo" infection ability of a glucanase-treated *Botrytis* spore.

Author: Bibiana Guerra, Editor: Kay Bogart. This summary series funded by J. Lohr Vineyards & Wines.