Scott, W. A. and R. L. Metzenberg. Location of aryl sulfatase in Neurospora conidio.

As part of our studies of sulfur metabolism in Neurospora crassa, experiments were carried out to determine the location of aryl sulfatase in conidia. The strain eth-1, cys-5 (formerly called r-eth-1, cys-5) was used. Conidia were collected from plates grown for five days at 24°C on Fries' minimal medium supplemented with 5mM methionine. Under these conditions this strain is derepressed for aryl sulfatase synthesis (Metzenberg and Parson 1966 Proc. Natl. Acad. Sci. U.S. 55: 629).

A suspension of intact conidia was capable of hydrolysing p-nitrophenyl sulfate. Such an assay detected about 65% of the total aryl sulfatase activity that could be demonstrated in cell free extracts. Washing with various buffers removed about 30% of the total activity; this fraction moy be considered an exoenzyme. A portion of the activity which could not be washed away, even with repeated washings, could be inactivated by a short treatment with 0.05 N HCl at 0°C - a treatment which does not reduce conidiol viability. After acid treatments for up to one hour, about 10% of the total enzyme activity remained.

Brief treatment of the conidia with cold chloroform or acetone (B. M. Eberhort, personal communication) revealed a "cryptic" comportment of enzyme amounting to about 35% of the total activity seen in extracts of unwashed conidia. A "cryptic" fraction of this size was also observed after disruption of conidio with an X-Press (Edebo 1960 J. Biochcm. Microbiol. Technol. Eng. 2: 453). heating for 5 minutes at 60°C, or incubation with 100 µg/ml of nystatin or ascosin for 30 minutes at 0°C. Each of these treatments, excepting the antibiotic treatment, rendered all of the enzyme activity acid-sensitive, presumably by rendering the cell membrane permeable to H^+ ions. Thus it appears that there are at least three distinguishable compartments of aryl sulfatase in conidia: a "washable" fraction outside the cell wall, a cell-bound fraction outside the cell membrane, and an internal fraction.

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