UV transmission through various clear films in mutation experiments

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Abstract
Clear films for UV mutation experiments

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ments of one sample. Greater reproducibility could probably be achieved by the use of a microbalance. Serious deviations from logarithmic growth rates occurred if the mycelia clumped rather than remaining dispersed. Dry weights in the former case were as much a 20-40% lower than in the latter. The clumping pattern of growth was avoided by the removal of mycelial fragments from the conidial inoculum and by coating the inner surface of the culture flask with dimethyl-di-chlorosilone.

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Eight-day cultures, grown on Vogel's agar medium (1.5% agar) with arginine (50 mg/100 ml medium) was washed down with a stream of Vogel's arginine SSP medium (Vogel's arginine medium plus 2% sucrose, 10% sorbose, Penicillin G Sodium 1000U/ml of medium, dihydrostreptomycin sulphate 100μg/ml of medium) with a sterile Pasteur pipette. The milky liquid was transferred to a sterile tube and centrifuged 15 minutes at 2500 rpm.

The supernatant was discarded and the residue resuspended in the freezing fluid (Vogel's arginine SSP plus dimethyl sulfoxide, 4:1), until a four-fold dilution of this suspension gave on absorbance reading of 1.0 at 280 nm on a Beckman spectrophotometer. 2 ml of the concentrated suspension was placed in sterile vials, sealed and quick-frozen, using liquid nitrogen. The vials were stored at -70°C until used. To date they have been held up to three months, but longer periods of holding time are being tested.

Thawing was done in warm water and the contents of the vial were emptied into a filter of Vogel's medium plus arginine and antibiotics (Penicillin and Streptomycin in the concentrations noted above). No retardation of growth has been noted when the frozen and thawed cultures have been compared to others maintained by continual passage.

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To reduce the risk of contamination in long, or student-operated UV exposures, it is desirable to use some form of cover on the irradiated sample. Traditionally quartz has been used for this purpose. This report indicates that some cheaper materials are just as good. The materials tested were: plastic Petri plates (from a/s Nokra plast, DK 4690, Naslev, Denmark); "Saran Wrap" (from Dow Chemicals, Ltd., 122 Arrow Road, Weston, Ontario); "Look Roasting Film" (from Look Film Associates, Scarborough, Ontario); and "Baggies" (from Colgate-Palmolive Co., Ltd., New York, N. Y.).

Strip of the clear materials from various sources were fitted into the sample cuvette of a Unicorn SP-800 UV spectrophotometer, so that the beam passed at right angles through one thickness. The behavior of the various films is shown in the Figure, in which the base line follows the 100% transmittance line. Most of the commonly-used UV tubes (e.g., Hanovia BBA-45, Osram HNS 12) emit at 254 millimicrons. It can be seen that of those materials tested, Baggies provide the only material which will transmit most radiation of this wavelength.

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This technique basically follows that of Perkins (Neurospora News. 9: 11) with the following modifications: (1) Crosses are made on filter paper strips in tubes containing liquid Westergaard medium. The medium contains 0.2% sucrose, compared to the usual 2%. This drastically therefore makes the use of fluffy unnecessary. Crosses are initiated by the simultaneous introduction of each parent as a drop or two of conidial suspension. (This technique was introduced to A. J. F. G. by F. J. de Serres). (2) Low conidiation and the use of filter paper permit the removal from the cross tube of all the perithecia. The paper can be cut up and placed on slides which are held inverted on adjustable platforms over the agar collection slabs. Two models of platforms have been used. (See figures on following page).

Model I has been used extensively for the routine collection of hundreds of asci. It consists of two tubing clamps (a), mounted on a plastic stand (b) with rapid-hardening epoxy glue. The inverted slide bearing the perithecia is placed across the top, and the slide bearing the agar collection block is placed across the two adjustable arms and racked up into close proximity to the dehiscing perithecia. Two such devices may be mounted back-to-back on each stand.

Model II is a more recent design and permits adjustment in two dimensions by the use of sliding plastic shelves (c). The shelves