Cross-feeding experiments to test for biological activity

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Cross-feeding experiments to test for biological activity

Abstract
Cross-feeding experiments to test for biological activity
Conidia germinated into visible colonies after 7 days, 0.1% sorbose in the medium, plus
fructose

<table>
<thead>
<tr>
<th>Strain</th>
<th>Conidia plated</th>
<th>0.01%</th>
<th>0.02%</th>
<th>0.05%</th>
<th>0.1%</th>
<th>0.25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S^+_{3/1}$</td>
<td>202</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$S^+_{3/3}$</td>
<td>282</td>
<td>162</td>
<td>181</td>
<td>175</td>
<td>158</td>
<td>194</td>
</tr>
</tbody>
</table>

Substrains have been isolated from colonies of slow and fast-growing strains. They have been re-checked on the same medium and their growth features are identical with the original strains. However, mutation to faster or slower growth occurs spontaneously. The mutation rate from slow to fast is ca. 1 in 200 germinating conidia.

The advantages of the new plating method are: 1) There are no agar-impurities or decomposition products to be taken into account when explaining any results, 2) All colonies grow on the same level (optical level and level of oxygen tension), 3) Individual colonies can be marked microscopically at an early stage and followed through their further development, 4) The medium can be replaced or changed without difficulties, sustaining the colonies in their original position.

The disadvantages are that plates with liquid medium are not easily handled, and that growth of wild-type is slow. The peculiarities of certain mutants in these and related media are under investigation.

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Nelson, N. Cross-feeding experiments to test for biological activity.

These cross-feeding experiments were originally performed to determine whether any of the 11 groups of adenine mutants induced in 74A and differentiated on the basis of heterocaryon tests would accumulate a diffusible precursor capable of supporting the growth of any of the other groups. Petri plates of Fries minimal agar plus 5 gamma/ml. adenine sulfate (20 ml. medium/petri plate) were inoculated with testers from each of the 11 heterocaryon groups. After 24 hours growth, cores were cut with a 1 cm. stainless steel cork borer from the growing mycelia and one core/plate was placed in a hole of identical size in the middle of a petri plate of unsupplemented Fries minimal agar (20 ml./plate). A circle of sterile dialyzer tubing, 3 inches in diameter, was used as the diffusible membrane. These circles were laid over the transplanted core. A core of the second tester strain was placed directly above the first core with the mycelial surfaces facing each other but separated by the membrane layer. If the top core showed stimulation, mycelial growth was on the surface of the membrane; while if the lower core grew, hyphae penetrated the agar. Tests were made in all combinations in this manner, and controls showed that the residual growth from the cores was negligible. In these experiments only the ad-8 mutants (adenine specific) produced a marked stimulatory effect. This stimulation was true for all groups except the ad-4 mutants which are also adenine specific. The ad-8 mutants are blocked in the adenine pathway between inosine monophosphate and adenosine monophosphate succinate and accumulate hypoxanthine which can feed all adenine mutants prior to this step. The same type of procedure might prove to be useful in other biochemical pathways to determine whether a given mutant accumulates a compound that can be used to feed mutants blocked earlier in the sequence. (These experiments were done while the author was at Yale University, New Haven, Connecticut, U.S.A., Edited by M. Case).

Prakash, V. Random ascospore isolation. A perithecium growing on the surface of an agar slant may discharge its ripe ascospores quite freely and these can be seen as a black powder on the inside of the tube; whereas, when the perithecium grows below the surface inside the medium, it is unable to eject the ascospores which remain in dark masses after the perithecium disintegrates. The ascospores are ejected through a protruding neck of a perithecium after acquiring a definite state of maturity. Spore shedding occurs after eight to seventeen days, depending