ON THE CHARACTERS OF CHOANELEPHORA
CUCURBITARUM THAXTER ON CHILLIES
(CAPSICUM SPP.)

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Choaneplhora cucurbitarum has been reported (Dastur, 1920) to cause a
wet rot of chillies (Capsicum sp.). In this paper the author has made
further observations on the characters of the fungus.

Conidia of the fungus growing on the host were inoculated in Brown's
standard medium and later monohyphal cultures were obtained to study the
characters of the fungus in pure culture.

The fungus was identified as Choaneplhora cucurbitarum Thaxter, and
compared with its former descriptions of Wolf (1917), Dastur (1920), and
Palm and Jochems (1924).

Zygospores

Zygospores developed in culture medium only and not on the host
(Text-Fig. 11). These are spherical with a thick, smooth and brown episporc
and are formed between tips of twining branches (Fig. 10). Zygospores
measure 55-90μ in diameter.

In previous descriptions (1917, 1920) of this fungus it has been stated
that the zygospores develop only when the mycelium arises from conidia
taken directly from the host and not when conidia are taken from the culture
medium. During the cultural study by the author no such peculiarity in the
formation of zygospores was noticed. The zygospores developed from the
mycelium arising from the conidia taken directly from the host plant or taken
indiscriminately from the fungus growing in the culture medium.

Sporangia

The sporangia of this fungus have been observed by Dastur (1920) and
Wolf (1917) to develop in culture medium only and never on the host
(Text-Fig. 11). Dastur stated that “except conidial stage no other stage of
this genus has been yet observed to occur on the host in natural conditions”.
But Palm and Jochems (1924) have since reported the occurrence of sporangia
of Choaneplhora cucurbitarum on the living plants of Amaranthus Blitum L.
The author also observed the occurrence of sporangia on rotting leaves
and stem of chillies. In another paper the author has reported sporangia of *C. cucurbitarum* developing on the plants of *Colocasia antiquorum*.

In nutrient medium Dastur (1920) found that the sporangia of the chilli *Choanephora* were always accompanied by conidia and did not occur apart

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**Figs. 1-10. *Choanephora cucurbitarum***

Fig. 1—Sporangiophore with columella, sporangial wall broken and persisting at the base of the columella. × 245. Fig. 2—Normal solitary sporangium. Spores not shown. × 245. Fig. 3—Diminutive sporangium with small columella. × 245. Figs. 4 and 5—Diminutive sporangia without columella. × 245. Figs. 6 and 7—Diminutive few spored sporangia. × 515. Fig. 8—Sporangiospore. × 515. Fig. 9—Conidiophore—a variation from the normal type. × 245. Fig. 10—Zygospore. × 245 (Drawn under Camera lucida).
from them. But Wolf (1917) has reported the sporangia of *C. cucurbitarum* on squash to occur apart from conidia in culture medium. The author also observed sporangia of the chilli fungus to develop in culture medium both apart from the conidia and in association with them.

In the former description of this fungus on Chillies normal solitary sporangia have been described (Figs. 1, 2). Each is terminal and usually pendent on the recurved end of an erect unbranched sporangiophore, provided with a definite columella which tends to become globose and containing a large number of sporangiospores. Wolf (1917) has described normal and reduced sporangia from culture medium. The diminutive sporangia were as small as 2–3 spored; but it is not stated whether these reduced sporangia had columella or not. The author also has observed diminutive sporangia (Figs. 3, 4, 5, 6, 7) among the normal ones in culture medium. These reduced sporangia were very small with corresponding reduction in the size of columella which was entirely lacking in still more diminutive ones. The number of sporangiospores per sporangium also exhibited a decrease with the reduction in the size of the sporangium. In several cases small sporangia without columella and with a single spore have been observed (Fig. 6). Palm and Jochems (1924) have suggested that the shape and the size of the columella should be made the basis of classification in determining the species of the genus *Choanephora* as has been done in the genus *Mucor*. But the size and also the shape of the columella in *Choanephora* are so variable in one single species of the genus that it would be unsafe to attach much importance to these characters as of specific value.

**Conidia**

The conidial fructifications and conidia are similar to those described by Dastur (1920). But variations from the normal course of development of conidiophores as noted by Wolf (1917) have been found in the chilli fungus as well. In culture medium the conidia may arise directly from the surface of primary head (Fig. 9), a condition also noted by Thaxter (1903) and characteristic of the genus *Rhopalomyces*. These are not necessarily depauperate forms, since they appear in cultures with normal well-developed fructification.

The observations of the various authors on the occurrence of various spore stages of four species of *Choanephora* have been compared in the text-figure below:
Characters of C. cucurbitarum Thaxter on Chillies

Text—Fig. 11

Observations on the occurrence of the various spore stages of the species of Choanephora

<table>
<thead>
<tr>
<th>Species of the genus</th>
<th>Authors</th>
<th>Conidia</th>
<th>Sporangia</th>
<th>Zygospores</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>On the host</td>
<td>In culture</td>
<td>On the host</td>
</tr>
<tr>
<td><strong>Choanephora Simsoni</strong></td>
<td>Cunningham, D. D.</td>
<td>-</td>
<td>+</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>+</td>
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<tr>
<td></td>
<td>Thaxter, R.</td>
<td>+</td>
<td>+</td>
<td>-</td>
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<td></td>
<td>Wolf, A.</td>
<td>+</td>
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<td>-</td>
</tr>
<tr>
<td><strong>Choanephora cucurbitarum (Syn. C. Americana)</strong></td>
<td>Dastur, J. F.</td>
<td>+</td>
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<td>Sinha, S.</td>
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Acknowledgment

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References


Palm, B. T., and Jochems, S. C ... "Choanephora cucurbitarum causing a disease of Amaranthus Biltem L.," Phytopath., 1925, 4.


