

Techniques

A Simplified Medium for Growing *Cercospora arachidicola*

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ABSTRACT

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An agar medium (PHEA) prepared from ground peanut hulls which were either soaked or unsoaked was compared to the commonly used peanut oatmeal agar (POA). Conidial production by *Cercospora arachidicola* was

significantly greater on unsoaked-PHEA than in soaked-PHEA and POA. The unsoaked-PHEA requires significantly less time to prepare.

Additional key words: *Arachis hypogaea*, peanut leafspot.

Cercospora arachidicola Hori, one of the two important *Cercospora* leafspot fungi on peanut, grows slowly and sporulates sparsely on most agar media (1,2,4). Abdou (1) reported sporulation on peanut leaflet extract, oatmeal, lima bean, and mycophil agar media. The most commonly used medium is peanut oatmeal agar (POA) which was developed by Smith (3). To prepare this medium, peanut plants must be grown for at least 2 wk, the foliage harvested and ground, and the resultant slurry mixed with the extract from boiled oatmeal.

The purpose of this paper is to describe a new medium, peanut hull extract agar (PHEA), which is easier to prepare and supports more profuse sporulation than POA.

MATERIALS AND METHODS

The hulls and leaflets of peanut (*Arachis hypogaea* L. 'Florunner') were used in this study. Three media were prepared for comparison. These were: soaked-PHEA, unsoaked-PHEA, and POA. The peanut hulls were obtained from a peanut sheller and stored in paper bags until needed. Approximately 180 g of dry peanut hulls were placed in a 2,000 ml flask with ~1,700 ml of tap water. After soaking for 24 hr the peanut hulls were ground, in portions, in a Waring blender for 1 min in the liquid from the flask.

Additional water was added to aid in blending. The resultant slurry was filtered through two layers of cheesecloth and the final liquid volume was brought up to 1 L. Less than 10% of the ground peanut hulls passed through the cheesecloth. Agar (2%) was added and the medium (soaked-PHEA) was autoclaved for 15 min at 121 C. A second medium was prepared by following the same procedure except that the peanut hulls were blended in water without prior soaking (unsoaked-PHEA). Peanut oatmeal agar was prepared as previously described (3).

A suspension of spores and mycelium of *C. arachidicola* obtained from POA plates was used to inoculate 15 plates of each of the three media. The inoculum concentration was adjusted to 43,000 spores per milliliter with a hemacytometer. One-half milliliter of suspension was placed in each plate and uniformly spread over the surface. The plates were randomized in a Percival growth chamber set at 28 C with continuous lighting of 26 microeinsteins/m²/sec. This study was repeated three times.

An additional study was conducted to determine the influence of peanut hull dry weight on fungal sporulation. Unsoaked-PHEA medium with 60, 100, 140, and 180 g of peanut hulls per liter was prepared. The above procedures of medium preparation and inoculation were followed.

RESULTS AND DISCUSSION

Unsoaked-PHEA, soaked-PHEA, and POA plates averaged 10.3×10^6 , 8.5×10^6 , and 7.1×10^6 conidia per plate, respectively. There was no significant difference ($P = 0.05$) between the soaked-PHEA and the POA plates. However, significantly more ($P = 0.05$)

spores were produced in the unsoaked-PHEA plates than in the others. The percent spore germination was approximately the same for the three treatments.

The unsoaked-PHEA with 60, 100, 140, and 180 g peanut hulls per liter averaged 8.6×10^6 , 9.8×10^6 , 12.0×10^6 , and 14.1×10^6 conidia/plate, respectively (FLSD [$P = 0.05$] = 2.6). The upper limit of 180 g/L was determined by the capacity of a 2,000 ml flask.

Hulls can be collected from any shelling operation in areas where peanuts are grown. Peanut hulls also can be stored for long periods. In contrast, the preparation of POA involves growing peanut plants for several weeks before grinding the leaves in addition to boiling and straining the oatmeal. Unsoaked-PHEA requires considerably less time to prepare and supports more sporulation than POA. *Cercosporidium personatum* (Beck & Curtis) Deighton and *Colletotrichum gloeosporioides* (Penz.) Arx. also grows and sporulates on unsoaked-PHEA (R. Littrell and J. B. Jones, personal communication).

LITERATURE CITED

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