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Isolation of Cryptococcus-like yeast from natural environments

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BACKGROUND

- Cryptococcus is a genus of yeast with many species and is found in the environment.
- Few species of Cryptococcus are capable of causing infection in humans.
  - Notably, causes meningitis and pneumonia.
  - Infects immunocompetent and immunocompromised hosts.
  - C. neoformans and C. gattii comprise the overwhelming majority of infections.
- Approximately five cases of cryptococcal infections are diagnosed at Aurora yearly.
- Cryptococcus is infrequently isolated from the environment, despite the presumed infection source.
- No reported isolations in Wisconsin since 1964.
- C. gattii endemic areas are expanding worldwide.

METHODS

- Samples were obtained from tree structures and other natural and built surfaces from Northern and Southern WI (303 samples) and NE Ohio (8 samples) from April-December, 2017. Samples of material were collected using cotton (38 samples) and liquid Amies elution (73 samples) swabs and were maintained at 4°C prior to plating.
- Samples were incubated at 35°C on Sabouraud dextrose agar. Colonies suspicious for Cryptococcus were identified by tan appearance on Sabouraud agar.
- Suspicious colonies were then incubated on Sabouraud dextrose and brain-heart-infusion agar at 20 and 37°C to further isolate these colonies and identify growth at ambient versus body temperature.
- These colonies were additionally incubated on urea agar to evaluate for urease activity.
- Lastly, these colonies were examined microscopically with India Ink with particular attention given to capsule identification.

RESULTS

- Liquid Amies elution swabs and isolation at 35°C reduced background mold growth.
- Of the 111 samples, two isolates of Cryptococcus-like yeast identified from the same weeping willow tree in Green Isle, WI.
- Characteristics of isolates included:
  - Tan isolates on Sabouraud agar that appeared very similar to Cryptococcus.
  - Grew at 37°C.
  - Urease positive.
  - Capsule present, albeit thin rather than broad.
- One isolate tested via matrix assisted laser desorption/ionization (MALDI) technology did not match with any database organism.
- No putative pathogenic Cryptococcus was isolated from these samples, consistent with the 0-10% isolation success reported in the literature.

CONCLUSIONS

Isolation of these Cryptococcus-like yeasts suggests that further isolation attempts with this technique may result in isolation of pathogenic Cryptococcus strains from the environment in Wisconsin.

OBJECTIVE

To isolate pathogenic Cryptococcus from Wisconsin natural sites.

REFERENCES