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Session: Mycology, Fungal Infections and Antifungal Drugs

Date: Friday, April 4, 2014

Time: 12:45-14:15

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**Antifungal potential of plants extracts and their combination with two drugs against yeasts species**R.K.M. Toghuelo<sup>1,\*</sup>, F. Fekam Boyom<sup>2</sup><sup>1</sup> University of Yaounde I, Yaounde, Cameroon<sup>2</sup> University of Yaounde I, Yaounde, Cameroon

**Background:** Fungal infection has become a serious public health problem in the last two decades. In order to search for alternative treatment, the *in vitro* antifungal activities of extracts from *Uvaria angolensis*, *Uvaria muricata* (Annonaceae), and *Terminalia catappa* (Combretaceae) was evaluated and their optimization with Nystatin and Ketoconazole was done.

**Methods & Materials:** Leaves, twigs and stem of plants were subjected to aqueous and ethanolic extraction. Agar dilution method was used to screen the antifungal activities. The phytochemical screening of the most active was done followed liquid-liquid partition to obtain fractions. Broth microdilution method and subculture were used to determine their antifungal parameters (MIC and MFC). The most active extracts were selected and their combination with antifungal agents assayed in order to optimize their activities.

**Results:** The yields of the extraction varied from 3.21% to 20.54%. Nine extracts were selected after preliminary antifungal screening. The phytochemical screening revealed the presence of phenols, flavonoids, anthocyanins, essential oils, triterpenes, steroids and saponins. The extract from leaves of *Terminalia catappa* showed the best antifungal activity with MIC of 1.56 mg/ml, 0.78 mg/ml and 0.78 mg/ml respectively on *Candida albicans*, *Cryptococcus neoformans* and *Candida parapsilosis* isolated from HIV patients. The most sensitive isolate was *C. parapsilosis* and the least sensitive was *C. albicans*. The interaction study of the combination of the promising extracts with Nystatin and Ketoconazole presented synergistic effects with the best index being FICI: 0.17±0.09 from *Terminalia catappa*'s extract on *Candida albicans* and as significant reduction of the MIC values of the extracts, Nystatin (3 to 1600 times) and Ketoconazole (2 to 512 times).

**Conclusion:** These results support the traditional use of these plants in the treatment of infectious diseases and suggest that they could serve as potential sources of antifungal. They also showed that the combination of these extracts with antifungal drugs offers significant potential for the development of novel antifungal therapies.

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**Identification of *Candida* species and investigating antifungal susceptibility in Turkey**E. Aydin<sup>1</sup>, A. Karakas<sup>2</sup>, U. Savasci<sup>3</sup>, Y.K. Akpak<sup>4</sup>, S.O. Caymaz<sup>5</sup>, S. Aydin<sup>6</sup>, D.Y. Metin<sup>7</sup>, O. Ozgenç<sup>8</sup>, M. Avci<sup>8</sup>, H.C. Gul<sup>9</sup>, O. Coskun<sup>10,\*</sup>, S.A. Coskuner<sup>11</sup><sup>1</sup> Kars State Hospital, Kars, Turkey<sup>2</sup> GMMMA, Ankara, Turkey<sup>3</sup> Ardahan Military Hospital, Ardahan, Turkey<sup>4</sup> Sarikamis Military Hospital, Kars, Turkey<sup>5</sup> Bozyaka Education and Research Hospital, Izmir, Turkey<sup>6</sup> Kafkas University Hospital, Kars, Turkey<sup>7</sup> Ege University, Faculty of Medicine, Izmir, Turkey<sup>8</sup> Dokuz Eylul University, Faculty of Medicine, Izmir, Turkey<sup>9</sup> Gulhane Military Medical Academy School of Medicine Hospital, Ankara, Turkey<sup>10</sup> Gulhane Military Medical Academy, Ankara, Turkey<sup>11</sup> Bozyaka Education and Research Hospital, Izmir, Turkey

**Background:** The purpose of this study is develop a typology of candida species produced from patient samples, and determine their in-vitro antifungal susceptibility.

**Methods & Materials:** In this study, *Candida* species isolated from patients who applied to our laboratory between 2009–2010 were included in order to identify the types of *Candida* and to carry out their antifungal sensitivity. The *Candida* species were typed using germ tube test, corn meal Tween-80 and BBL CHROMagar medium, and API ID32C yeast identification system. Antifungal susceptibility of *Candida* species for amphotericin B, fluconazole, itraconazole, and voriconazole were conducted through microdilution system.

**Results:** Of the 97 *Candida* species, 58.76% were identified as *Candida albicans*, other identified types were as follows: *C. parapsilosis* (13.4%), *C. glabrata* (11.3%), *C. tropicalis* (5.15%) respectively. As for the antifungal sensitivity tests, results revealed 1.03% resistance to fluconazole and 4.12% to itraconazole, whereas no resistance was found to amphotericin B and voriconazole.

**Conclusion:** Target population for *Candida* has gradually been expanding. Therefore, it may be suggested that determining the type of pathogen and running its susceptibility tests are significant factors that will enhance the success of the treatment before empirical treatment against *Candida* infections is initiated.

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