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Extended Abstract
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Mass Spectrometry 2017: Evaluating and comparing anti-fungal constituents from Annona senegalensis methanol extract using LCMS and fitness test techniques

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Annona senegalensis soft tissue plants parts has been used as ethno-medicine in various regions of Africa for curing various fungal infections. Liquid chromatography coupled with mass spectrometry and fitness test techniques were used to determine the antifungal constituents from the methanol extract which was found to have anti-fungal activities giving an inhibitory zone of 9.667±0.557 mm in comparable with gentamycin giving inhibition zone of 15 mm after 24 hrs when bio-assayed on cultured Melassezia globosa. The unpurified extract was analyzed for anti-fungal bioactive chemical constituents by standardized high resolution LC-MS technique and the peaks of the components were compared with LC retention times and the apparent mass spectrum both in negative and positive modes with respect to Merck historical database of isolated natural products. The isolated compounds were characterized with 1D and 2D NMR spectrometry. Among the isolated chemical constituents, LC-MS data did not match other constituents shown by FT profile thus challenging LC-MS techniques in evaluating bioactive chemical components from natural products.

Treating fungal infections and diseases related to fungal infections is a real challenge for doctors, mainly because of the resistance caused by overuse and the side effects of uplift after using antifungal drugs or mythical beliefs. Plants commonly used in traditional medicines are believed to be free from unwanted effects due to their long use in the treatment of diseases according to knowledge accumulated over the centuries despite recent scientific discoveries which have shown that many plants used as food or in ethno-medicine are potentially toxic, mutagenic and carcinogenic. As world views are now shifting towards the use of non-toxic herbal products for traditional medicinal use, the development of modern medicines from medicinal plants should be emphasized to combat various infections. It has already been estimated that 122 drugs from 94 plant species have been used ethnobotany. Medicinal plants have become important for the treatment of various diseases, such as malaria, diabetes, anemia, but the potential of higher plants as sources of new drugs is still unexplored. Their systematic screening can lead to the discovery of new effective molecules. Plants are likely to continue to be a valuable source of new molecules which, after chemical manipulation, will provide new and improved drugs.

The plant is said to have great native medicinal value. It has been used as a snake anti-venom and to treat chest pain, cough, anemia and urinary tract infections. It is also used to treat venereal disease, arthritis and rheumatism, diarrhea and dysentery. The plant has also been used for malaria, head and body aches, trypanosomiasis and leishmaniasis. It has been found to have antibacterial activity, antiprotozoal activity, anti-ulcer / antacid activity, molluscicidal activity and anthelmintic activity. Mixed extracts of plant parts of Annona senegalensis have been found to inhibit the growth of cancer cells, swelling of the eyelids, yeast, and antibacterial and antitumor agents. The methanol extract of soft root bark has been shown to have analgesic and anti-inflammatory activities.

Preparation of Annona senegalensis aqueous extracts

After collection, the fresh leaves and softened bark were dried in the shade for five days while the soft root tissue was washed with distilled water and dried in the shade for two weeks. The

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fresh leaves and softened bark were then crushed differently (about 1 kg each) while the roots were sprayed into a fine powder of about 780 g. The two were divided into seven different 500 ml beakers containing different solvents, namely water, acetone, ethanol, ether, chloroform, methanol, dichloromethane and methanol 1:1, covered and left at room temperature for six days with continuous monitoring and occasionally shaken. The liquid extracts obtained were subjected to a rotary evaporator then concentrated under reduced pressure (under vacuum at 400 ° C) and evaporated to dryness then stored at 40 ° C in an airtight bottle.

Conclusion

The methanol extracts of Annona senegalensis have been found useful for inhibiting the growth of the fungus Malassezia globossa. Mixing the plant's antifungal methanol extracts, at evaluated concentrations, in a soap preparation would give an appropriate herbal antifungal soap, making it easy to use and apply. Continuous bathing with herbal soap can be a good preventive measure for fungal infection in these areas. More studies are needed to characterize this bioactive antifungal compound and to determine its safety profile. Other comparative studies with other available antifungals to establish its effectiveness are also recommended.

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