

Effect of Moringa Oleifera Seed Extract against Some Selected Bacteria and Some Fungi

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Abstract: This research work was performed to test the potentials of Moringa seed extract in controlling the growth of some bacteria and fungal species. The extract showed resistance against all the fungal isolates including *Aspergillus niger*, *Penicillium verricosum*, *Aspergillus flavus*, *Rhizopus oligosporus*, *Aspergillus fumigatus*, *Fusarium graminearum* and *Mucor Circinelloides*. The extract showed activity against some of the bacterial isolates including *Staphylococcus aureus*, *Bacillus subtilis* and *Streptococcus pyogenes* with minimum inhibitory concentration of 100mg/ml each, on the other hand resistance were observed in *E. coli*, *S. typhi* and *K. pneumoniae*

Keywords: Moringa, fungi, Bacteria

Introduction

Moringa Oleifera belongs to the monogeneric family, moringaceae, and is widely cultivated in many tropical countries, e. g, Africa, India, Srinlanka, Thailand, Burma, Mexico, Malaysia and the Philippines (Fehey, 2005). It has been used for treating bacterial infection, fungal infection, Inflammation, sexually-transmitted diseases, malnutrition and diarrhea (Fehey, 2005, Farooq *et al*, 2012,), documented plant herbs due to their extraordinary nutritional and medicinal properties. (Fehey, 2005). Different parts of this plant were used in native systems of medicine for the treatment of variety of human ailments and are also eaten as vegetable.

Due to beneficial properties of this plant, it has been extensively researched for over the last 10 years (Foild *et al*, 2001). Because of high fat content of its seed (35-42% by weight). It can be used as biofuel, vegetable oil, cosmetic medicine. It has been reported that polypeptides in seeds are one of the best natural coagulants and can bind to many moieties and possesses antimicrobial properties that can be used for water treatment (Anwar *et al*, 2007a). The presence of some phytochemical substance especially a short polypeptide found in the seed extract was reported to act directly on microorganisms and result in growth inhibition by disrupting cell membrane synthesis as essential enzymes (Bukar *et al*, 2010).

The synthetic antioxidants are mainly butylated hydroxyl anisole (BHA) and butylated hydroxyl toluene (BHI), which are used in many food formulations to enhance their oxidative

stabilities during storage. Antioxidants derived from natural sources are in high demand for food application to replace the synthetic antioxidants (Lutterodt *et al*, 2011). MO seed oil its edible and reported to be a rice sources of monounsaturated fatty acid, particularly oleic acid (C18:1) (71-74% of total fatty acids) (Ruttarattanamongkol *et al*, 2014). High oleic acid have been proved to be more resistant toward oxidation (Anwar *et al*, 2007b). Our previous study suggested that the high oleic acid content of the (MO) oil coupled will its low peroxide value and acidity may qualify the (MO) oil as a natural derived antioxidant in food and cosmetic industries (Ruttarattanamongkol *et al*, 2014). Moringa seed oil was reported to enhance the oxidation stability of some vegetable oils during deep-frying (Anwar *et al*, 2007b).

In recent years, interest have been generated in the development of safer antifungal agent from natural plant products such as essential oils and extracts to control fungal disease, various plant material is believed to have antifungal activity, as many essential oils and plants extracts have been reported to have antifungal activities will no side effects on human and animals (Tabassum and Vidyasagar, 2013). Previous in vitro and in vivo investigation suggested that the essential oil and plant extracts could be used as an effective antifungal agent against many phytopathogenic fungi

Moringa Oleifera is a highly valued plant, distributed in many countries of the tropics and sub-tropics. It has an impressive range of medicinal uses will high nutritional value. Different part of this plant contains a profile of important minerals, and are a good source of protein, vitamins, B-carotene, amino acids and various phenolics (Farooq *et al*, 2007). The Moringa plant provides a rich and rare combination of zeatin, quercetin, kaempferol and many other phytochemicals. It is very important for its medicinal values.

METHODOLOGY

SAMPLE COLLECTION

The sample (Moringa oleifera seed) were brought from Pompomari Kareto Close Maiduguri: it was grinded into a fine powder after drying at room temperature, then and take it to the laboratory.

PROCEDURE AND EXTRACTION

50g of Moringa Oleifera seed were mixed with 50ml of water and 50ml of ethanol separate round up bottom flask

- ii. The flask was the introduced to the condenser and insert it inside the heating mantle
- iii. The extractor was 30°C and was allowed to run for 30 minutes
- iv. The flask we removed and allow the temperature to fall down
- v. Mixture was then filtered using filter paper and funnel
- vi. Then the extractor was transferred into a clean container .

ANTIMICROBIAL ACTIVITY

A portion of the organisms were subcultured using spread method on to a freshly prepared growth media for bacteria and SDA for fungi with a sterile wire loop. The extract was introduced at different concentration into the inoculated plates and incubated at room temperature over

night. The presence or absence of growth around the antagonist shows an indirect measure of the extract to inhibit the growth of organisms.

RESULT AND DISCUSSION

Effect of *Moringa Oleifera* seed extract on some selected fungi

TABLE 1.

Organism	Ethanol extract	Aqueous extract
<i>Aspergillus niger</i>	R	R
<i>Penicillium verrucosum</i>	R	R
<i>Aspergillus flavus</i>	R	R
<i>Rhizopus oligosporus</i>	R	R
<i>Aspergillus fumigatus</i>	R	R
<i>Fusarium graminearum</i>	R	R
<i>Mucor circinelloides</i>	R	R
<i>Candida albicans</i>	R	R

TABLE 2.

Organism	Zone of inhibition	MIC Mg/ml
<i>Staphylococcus aureus</i>	15	100
<i>Bacillus subtilis</i>	14	100
<i>Streptococcus pyogenes</i>	25	100
<i>E. coli</i>	R	R
<i>S. typhi</i>	R	R
<i>K. pneumoniae</i>	R	R

DISCUSSION

This study reports the Antifungi activity of different concentrations of *Moringa Oleifera* seed extract against *Aspergillus Miger*, *PenialliumVerucosum*, *Aspergillus Flavus*, *Rhizopus oligosporus*, *Aspergillus*, *Fumigatus*, *Fusarium graminearum*, *Mucor Circinelloides*, *Candida*. The result of antifungal activity of the investigated extract are shown in Tables 1 and 2 in this study both ethanol and water extracts showed no inhibition against the fungi tested. In this study, a positive result was observed in ethanol extracts of Moringaseed at concentration of 100mg/ml. The highest antibacterial activity of 15cm was recorded in *staphylococcus aureus* and activity was also recorded in *Bacillus Subtilis*, *Streptococcus pyogenes* and *Pseudomonas aeruginosa* with inhibition zone of 15mm, 14, 25mm respectively.

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