

# MORINGA OLIFIERA LEAVES AS ANTIMICROBIALS

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## ABSTRACT

Use of moringa leaves in food items as a replacement to health hazardous inorganic food preservatives. This antioxidant property is previously discussed but this property was not used in food as preservatives. Moringa leaves powder was consumed many a times but here we are mixing it in food samples to see how these protect the food products by their antioxidant properties added with their antimicrobial property.

## I. INTRODUCTION

### 1.1. REQUIREMENT OF ANTIOXIDANT/ANTIMICROBIAL COMPOUNDS IN FOODS

An antioxidant is a molecule that control the oxidation of other molecules. Oxidation is a chemical reaction that produces free radicals, leading to chain reactions that may influence cells. Antioxidants such as thiols or ascorbic acid (vitamin C) stop these chain reactions. The term "antioxidant" is mainly used for two different groups of substances: industrial chemicals which are added to products to control oxidation, and natural chemicals found in foods and body tissues which are said to have advantageous health effects. <sup>[1]</sup>

## II. HEADINGS

### 2.1. EFFECT OF INORGANIC ANTIOXIDANTS IN FOOD

The pharmacology of the food preservatives butylhydroxyanisole (BHA) and butylhydroxytoluene (BHT) as well as the naturally occurring vitamin E (alpha-tocopherol) is described. In high dosages all three compounds generate in animals impairment of blood clotting, which can be explained by an antagonism with vitamin K. Definite toxic effects to the lung have only been observed with BHT. <sup>[2]</sup>

### 2.2. PROPERTIES OF MORINGA LEAVES

Moringa plant is onset to gain more popularity as a new "superfood" for its highly nutritious contents and powerful anti-inflammatory, antioxidant, and tissue-protective properties among many other health benefits. Moringa is abundant source of vitamins, minerals, and amino acids. It accommodates noteworthy amount of vitamin A, C, and E; calcium; potassium; and protein. <sup>[3]</sup> Moringa holds antioxidants called flavonoids, polyphenols, and ascorbic acid in the leaves, flowers, and seeds. <sup>[4]</sup> Inflammation can lead to chronic diseases

like diabetes, respiratory problems, cardiovascular disease, arthritis, and obesity. Moringa reduces inflammation by concealing inflammatory enzymes and proteins in the body, and moringa leaf concentration can noteworthy reduces swelling in the cells. Moringa has antibacterial and anti-fungal properties that brawl against infections. It's been productive against types of fungi that cause infections on skin and strains of bacteria responsible for blood and urinary tract infections and digestive problems. <sup>[5]</sup>

### III.FIGURES AND TABLES

#### EXPERIMENT TO CHECK ANTIOXIDANT/ANTIMICROBIAL PROPERTY

Experiment Details(home)

- Materials: 2 Samples of "RAJMA" sabji(one containing moringa leaves powder and other not containing any additives)
- Samples are left open in surrounding
- They react with the surrounding –bacteria,microOrganisms, mould ,fungi etc
- Observation- The experiment done at home shows that the after 4-5 days there a drastic difference can be see in both samples .first one with some white thread like substanes and also some green microbes.
- Remark-Still both samples are not consumable by humans i.e. not edible

Observation- Day1



Sample 1(without moringa leaves)



Sample 2(wiyh moringa leaves)

Day 2



Sample 1(without moringa leaves)



Sample 2(with moringa leaves)

DAY 4



Sample 1(without moringa leaves)



Sample 2(wiyh moringa leaves)

Experiment details (Done at the laboratory)

- Materials : 2 Samples of "CHOLE" sabji (one containing moringa leaves powder and the other not containing any additive)
- Quantity taken:100gms of each sample
- Sample received date-2/4/18
- Duration of analysis-2/4/18 to 5/4/18

- freshly prepared samples are given to chemical laboratory
- The observation was that the growth of bacterial growth in jar 1 was much more less than jar 2
- Observation: Microbiological count for both samples

Test results for Sample 1 (without moringa leaves) -bacterial count on 2<sup>nd</sup> day was TNTC (Too Numerals to Count).

a) Sample Name: Chole Sabji					
b) Sample Condition : Good			e) sample Received Date : 02.04.2018		
c) Sample Qty : 100 gm 05.04.2018			f) Duration of analysis : 02.04.2018 –		
<b>Microbiological Analysis :</b>					
Sr.No	Test Parameters	Results	Days	Limits	Method
1.	Total Plate Count	<10 cfu/gm	1 <sup>st</sup> day	NMT 1 x 10 <sup>5</sup> cfu/gm	IS 5402: 2012
		TNTC	2 <sup>nd</sup> day	NMT 1 x 10 <sup>5</sup> cfu/gm	IS 5402: 2012

**Remark: Food Sample is Not Safe for human consumption.**

NMT : Not More Than

CFU/gm : Colony forming unit per gm

Test Results for Sample 2 (containing moringa leaves)- bacterial count on 2<sup>nd</sup> day was much less than previous sample.

a) Sample Name: Chole Sabji With Ingredients					
b) Sample Condition : Good			e) sample Received Date : 02.04.2018		
c) Sample Qty : 100 gm 05.04.2018			f) Duration of analysis : 02.04.2018 –		
<b>Microbiological Analysis :</b>					
Sr.No	Test Parameters	Results	Days	Limits	Method
1.	Total Plate Count	2.2x10 <sup>2</sup> cfu/gm	1 <sup>st</sup> day	NMT 1 x 10 <sup>5</sup> cfu/gm	IS 5402: 2012
		4.4x10 <sup>3</sup> cfu/gm	2 <sup>nd</sup> day	NMT 1 x 10 <sup>5</sup> cfu/gm	IS 5402: 2012

**Remark: Food Sample is Not Safe for human consumption.**

NMT : Not More Than  
CFU/gm : Colony forming unit per gm

**IV.CONCLUSION**

This was mere visual observation done at home where sample without moringa leaves had mould growth when observed after some days and also had worse smell than the sample 2.

The total no of count of bacteria in sample with moringa leaves was much more less than that of sample without it . From the above lab experiment we conclude that moringa leaves powder can act as an organic antioxidant/antimicrobial

**Remark-**But still both the samples that is one with moringa leaves powder and one without it both are not edible that is not safe for human consumption.

**Extension-** The moringa leaves after improving their antibacterial and antioxidant properties can be further be used in place of inorganic harmful antioxidants in future food items.

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