

## ORIGINAL RESEARCH ARTICLE

**Comparative Study on the Analgesic Effect of Fresh *Moringa Oleifera* Juice with Ibuprofen in Albino Mice****Bhuvaneshwari S<sup>1\*</sup>, Amirtha B<sup>2</sup>, Bhuvaneshwari K<sup>3</sup>**

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**ABSTRACT**

This study was aimed to assess whether *Moringa oleifera* also have analgesic activity like NSAIDS. After animal ethics committee approval, this study was carried out. 6 male and 6 non pregnant female albino mice were used for the study. First they were given 1% acetic acid intraperitoneally, noted for number of writhings over 20 minutes. A week later Ibuprofen was given orally and 30 minutes later acetic acid was injected and number of writhings were noted. After one week interval, same procedure was repeated with *Moringa oleifera* instead of Ibuprofen. The results were statistically analysed. From our study it was found that, (1). Among male and female mice, there is no significant difference in reduction number of writhings. This shows that *Moringa Oleifera* has equal pain lowering effect in both males and females. Both among males and female mice, *Moringa* has decreased number of writhings compared to controls. This shows that it has analgesic property. (2). Both among males and females, there is no difference in reduction of number of writhings between *Moringa* and Ibuprofen. This shows that both have equal analgesic property. (3). From this study we conclude that *Moringa oleifera* has got analgesic properties as that of Ibuprofen. Thus the use of *Moringa oleifera* extract in relieving muscle pain can be promoted in both indigenous and other local medicinal practices directed towards people of low socio economic status.

**Key words:** Analgesic effect, *Moringa oleifera*, mice, Ibuprofen

**INTRODUCTION**

*Moringa oleifera* is a highly valued plant in the Indian subcontinent. It has an impressive range of medical uses with high nutritious value. Different parts of the plant contain important minerals, proteins, vitamins,  $\beta$  carotene, aminoacids and various phenolics. Various parts like leaves, roots, seeds, bark, fruits and flowers act as cardiac and circulatory stimulants possess antitumour, antipyretic, antiepileptic, anti inflammatory, anti ulcer, antispasmodic, diuretic, anti hypertensive, antioxidant, lowers cholesterol, anti diabetic, hepatoprotective, anti bacterial, antifungal activity and are employed for treatment in the indigenous systems in India<sup>[1,2]</sup>.

Malaya Gupta *et al* had shown that a methanolic extract of the root of *Moringa oleifera* was tested for possible pharmacological effects on experiential animals. Methanolic extract potentiated significantly the sleeping time induced

by phenobarbitone sodium, diazepam and meprobamate, showed analgesic properties and also potentiated analgesia induced by morphine and pethidine. Pretreatment with methanolic extract caused significant protection against strychnine and leptazol induced convulsions. The behavioural studies on mice indicate the CNS depressant Nature of *Moringa oleifera*<sup>[3]</sup>. So we planned this study to assess whether *Moringa oleifera* produces NSAID type of analgesic activity. Analgesic activity can be assessed by screening an agent for protection of pain against pain stimulus applied to supraspinal nociceptors. Since involving supraspinal nociceptor signify NSAID type of analgesia (acetic acid induced writhing), we have used that model to screen the analgesic activity of *Moringa oleifera*<sup>[4]</sup>.

**METHODOLOGY**

Before conducting the study animal ethics committee approval was obtained. *Moringa*

*oleifera* was procured locally and authenticated by Pharmacognosy department of the Institution.

#### Justification for dose of Ibuprofen:

Dose of ibuprofen for screening analgesic activity was found to 40mg/kg<sup>[5]</sup>.

#### Justification for dose of *Moringa oleifera*:

A pilot study was done to find out the minimum effective dose. It was found out that 0.5 ml of *Moringa oleifera* was effective (1kg of *Moringa oleifera* was grinded with mortar and pestle with 1L of distilled water).

#### Animals:

6 male and 6 non pregnant female albino mice weighing 18-25g were selected for the study. They were housed in cages and maintained with standard pellet feed and free access to drinking water.

#### NSAID type of analgesia:

The method outlined by Koser et al was followed<sup>[6]</sup>. Animals showing writhing within three to five minutes of intraperitoneal injection of 1% acetic acid were taken into the study.

#### Assessment of NSAID type of analgesia:

On the day of testing, Intraperitoneal injection of 1 %acetic acid was given to both group of mice without any intervention and the number of writhings over 20 minutes were noted down.

A week later these animal were fasted overnight and then given ibuprofen paediatric syrup at a dose of 40 mg/ kg by oral route. 30 minutes later, intraperitoneal injection of acetic acid was injected and the number of writhings over 20 minutes were noted down and tabulated.

In the 2<sup>nd</sup> week, these animals were again fasted overnight and then given *Moringa* juice 0.5 ml by oral route. 30 minutes later Intraperitoneal injection of acetic acid was injected and the number of writhings over 20 minutes were noted down and tabulated.

#### Statistical analysis:

SPSS version 19 was used to analyse the data. Pearson chi-square was used to compare between males and females. One way ANOVA was used to compare the means of the number of writhings within group in males and females using.

#### RESULTS

There was overall decrease in mean number writhings after giving Ibuprofen and *Moringa oleifera* compared to control among male mice and female mice (Table 1).

Between males and females there is no significant difference in number of writhings among controls, ibuprofen and *Moringa* (Table 2)

*Moringa oleifera* decreases number of writhings significantly compared to control in male. Decrease in number of writhings was not significant between *Moringa* and Ibuprofen (Table 3).

*Moringa oleifera* decreases number of writhings significantly compared to control in female. Decrease in number of writhings was not significant between *Moringa* and Ibuprofen (Table 4).

Table 1: Mean number of writhings for Males and Females mice (by one way ANOVA)

Groups	Male	Female
	Mean number of writhings	Mean number of writhings
Control	21.8	23.2
Ibuprofen	14	14.5
Moringa	7	10.2

Table 2: p value between males and female (by Pearson chi-square)

Between males and females	P value (<0.05 Significant)	95% Confidence Interval	
		Lower Bound	Upper Bound
Control	.407	.359	.378
Ibuprofen	.189	.447	.467
Moringa	.156	.221	.237

Table 3: p value between groups in males (by one way ANOVA)

Male	P value (<0.05 Significant)	95% Confidence Interval	
		Lower Bound	Upper Bound
Between control and Ibuprofen	.063	-4.816	16.1483
Between control and Moringa	.002	6.5184	23.1483
Between Ibuprofen and Moringa	.093	-1.3150	15.3150

Table 4: p value between groups in females (by one way ANOVA)

Female	P value (<0.05 Significant)	95% Confidence Interval	
		Lower Bound	Upper Bound
Between control and Ibuprofen	.004	3.2263	14.1070
Between control and Moringa	.000	7.5597	18.4403
Between Ibuprofen and Moringa	.110	-1.1070	9.7737

#### DISCUSSION

From our study we have found that

- Among male and female mice, there is no significant difference in reduction number of writhings. This shows that *Moringa Oleifera* has equal pain lowering effect in both males and females.
- Both among males and female mice, *Moringa* has decreased number of writhings compared to controls. This shows that it has analgesic property.

- Both among males and females, there is no difference in reduction of number of writhings between *Moringa* and Ibuprofen. This shows that both has equal analgesic property

From this study we conclude that *Moringa oleifera* has got analgesic properties as that of Ibuprofen. Thus the use of *Moringa oleifera* extract in relieving muscle pain can be promoted in both indigenous and other local medicinal practices directed towards people of low socio economic status.

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