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**Original Research Article** 

# Monteleukast and Levocetirizine Vs Monteleukast Fexofenadine in Allergic Rhinitis Cases: A Comparative Analysis

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**Conflict of interest: Nil** 

#### Abstract:

**Background:** An issue with the world's health is allergic rhinitis (AR). It is the main cause of serious illness and disability. In cases of allergic rhinitis, the current study examined Monteleukast, Levocetirizine, and Monteleukast Fexofenadine.

**Methods:** The 40 allergic rhinitis patients in the current study were split evenly between the sexes. Twenty patients each were placed into two groups. Patients in group I received a fixed-dose combination of montelukast 10 mg and levocetirizine 5 mg once daily, whereas patients in group II received a fixed-dose combination of montelukast 10 mg and fexofenadine 120 mg once daily.

**Results:** At baseline, group I mean TNSS was 11.4, at two weeks, it was 5.24, and at four weeks, it was 3.28. In group I, the mean TNSS was 10.5, 4.06 at two weeks, and 1.16 at four weeks. At the second and fourth weeks, the cost-effectiveness ratio in group I was considerably lower than in group II (P < 0.05). Three patients in group I and one in group II had nausea, while group I saw one sedation case and three in group II experienced dry mouth. The distinction was noteworthy (P < 0.05).

**Conclusion:** In patients with allergic rhinitis, we discovered that the montelukast-levocetirizine group performed better than the montelukast-fexofenadine group.

Keywords: Allergic rhinitis, Levocetirizine, Montelukast.

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### Introduction

An issue with the world's health is allergic rhinitis (AR). It is the main cause of serious illness and disability.[1] AR is thought to impact between 10% and 25% of people worldwide. Nasal congestion, rhinorrhea, itching, sneezing, and nonnasal symptoms including burning, itchy, and watery eyes, or itching ears and the tongue, are the major symptoms of AR. Because they impair cognitive and emotional functioning, these symptoms can have a significant negative impact on a patient's quality of life. The estimated direct annual cost associated with AR in the United States ranges from \$1.4 billion to almost \$6 billion.[2] A complex chain of actions is triggered when someone is exposed to a non-self-substance, whether through injection or infection. After lymphocytes engage with certain foreign

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chemicals that are specially recognised by adaptive immunity is those cells. produced. Allergic rhinitis is essentially result of the body's defence the mechanism, or immune response, which sends an alert anytime a foreign invader is discovered in the body. A late response happens 4 to 8 hours after contact, whereas an early response begins happening within a minute of exposure to allergens.[3] Antiallergy treatment nowadays is centred on avoiding the offending allergen, symptomatic medication, targeted immunotherapy, education. and The cornerstones of AR therapy include H1-antihistaminics, oral/intranasal decongestants, leukotriene receptor antagonists, and intranasal corticosteroids. Treatment of allergic rhinitis has been reported to be successful when using levocetirizine and fexofenadine. Despite the fact that Montelukast has been endorsed by numerous authors, it is beneficial in easing allergic rhinitis sufferers' symptoms.[4] In cases of allergic rhinitis, the current study examined Levocetirizine. Monteleukast. and Monteleukast Fexofenadine.

# Materials and Methods

The present study was conducted in the Department of Pharmacology, Jannayak Karpoori Thakur Medical and Hospital, Madhepura, Bihar from October 2022 to March 2023. Patients collected from outpatient department of ENT, JNKTMCH, Madhepura, and Bihar. It included 40 allergic rhinitis patients of both sexes. All participants received signed consent after being told about the study.

Names, ages, and other such details were noted. Twenty patients each were placed into two groups. Patients in group I received a fixed-dose combination of montelukast 10 mg and levocetirizine 5 mg once daily, whereas patients in group II received a fixed-dose combination of montelukast 10 mg and fexofenadine 120 mg once daily. A total leukocyte count, differential leukocyte count, liver function test, and kidney function test were performed on the patient. The overall nasal symptom score, cost-effectiveness ratio, and adverse drug reaction were all periodically checked on for all patients.

The Total Nasal Symptom Score (TNSS) is the sum of scores for each of nasal congestion, sneezing, nasal itching, and rhinorrhea at each time point, using a four point scale (0-3), where 0 indicates no symptoms, a score of 1 for mild symptoms that are easily tolerated, 2 for awareness of symptoms which are bothersome but tolerable and 3 is reserved for severe symptoms that are hard to tolerate and interfere with daily activity. TNSS is determined by summing up each symptom's score to produce a 12-point total.

Thusly obtained results were statistically analysed. P value under 0.05 was regarded as significant.

Parameters	Group I	Group II
Drug	Montelukast 10 mg p	s Montelukast 10 mg plus fexofenadine
	levocetirizine 5 mg	120 mg
Male	11	12
Female	9	8

Table 1: Distribution of patients

According to Table 1, patients in Group I received a tablet of Montelukast 10 mg plus 5 mg of levocetirizine, while patients in Group II received a tablet of Montelukast 10 mg with 120 mg of fexofenadine. Patients in groups I and II comprised 11 men and 9 women in group I and 12 men and 8 women in group II.

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Parameters	Baseline	2 weeks	4 Weeks	P value
Group I	11.4	5.24	3.28	0.01
Group II	10.5	4.06	1.16	0.01

## Table 2: Total nasal symptom score at baseline and at 2 weeks and 4 weeks

According to Table 2, the mean TNSS for Group I at baseline was 11.4, at 2 weeks it was 5.24, and at 4 weeks it was 3.28. In group I, the mean TNSS was 10.5, 4.06 at two weeks, and 1.16 at four weeks. The distinction was appreciable (P < 0.05).

Table 3: Cost-effectiveness ratio in both groups						
<b>Cost-effectiveness ratio</b>	Group I	<b>Group II</b>	P value			
At 2 <sup>nd</sup> week	16.2	23.2	0.02			
At 4 <sup>th</sup> week	24.1	28.4	0.05			

Table 3: Cost-effectiveness ratio in both groups

As shown in Table 3 at the second and fourth weeks, group I's cost-effectiveness ratio was considerably lower than group II's (P < 0.05).

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Group I	Group 2				
2	1				
1	2				
1	2				
	<b>Group I</b> 2 1 1				

 Table 4: Adverse drug reactions in both groups

Table 4 demonstrates that 2 patients in group I and 1 in group II had nausea, whereas group I and 2 in group II experienced sedation and dryness, respectively. The distinction was appreciable (P < 0.05).

# Discussion

Allergic rhinitis is an inflammation of the nose's mucous membrane brought on by allergens such pollen, dust, and other substances. One of the most prevalent conditions in today's society, it can lead to sleep disturbances, irritability, weariness, poor work performance, etc. Sneezing, itching, rhinorrhea, and nasal blockage are among the most typical symptoms of allergic rhinitis. A few writers have also noted a link with ocular symptoms.[5]

According to the World Health Organisation, allergic rhinitis affects up to 40% of children and 10–25% of adults globally.[6] Controlling the symptoms and enhancing the patient's quality of life are the two objectives of the treatment. In today's society, allergic rhinitis is also widely recognised as hay fever. After exposure to the allergen, immunoglobulin E (IgE) mediates the allergic reaction.[7] Inflammatory responses brought on by inflammatory cells such as mast cells and basophiles follow allergic reactions.

Histamines and leukotrienes, which are released by pro-inflammatory cells, cause symptoms like congestion, itching, sneezing, and other respiratory problems.[8]

In cases of allergic rhinitis, the current study examined Monteleukast, Levocetirizine, and Monteleukast Fexofenadine.

In the current study, patients in groups I and II received tablets containing Montelukast 10 mg plus levocetirizine 5 mg and 120 mg of fexofenadine, respectively. Patients in groups I and II comprised 11 men and 9 women in group I and 12 men and 8 women in group II. In school-aged children with allergic rhinitis, compared Kumari et al.[9] the effectiveness of Levocetirizine and monteleukast fexofenadine to and monteleukast. For the current investigation, a sample size of 40 allergic rhinitis patients was chosen. Depending on

the type of therapy given, samples were split into two groups (n = 20 Group 1- LM and (n = 20 Group 2-LF). 40 patients, ages 8 to 15, were included. 40 patients total; 23 men and 17 women. On the seventh day, Group 1 TNSS reduction was 52.8%, Group 2 was 60.8%, and on the fourteenth day, it was 83.8% for Group 1 and 92.1% for Group 2.

We discovered that the mean TNSS for group I was 11.4 at baseline, 5.24 at two weeks, and 3.28 at four weeks. In group I, the mean TNSS was 10.5, 4.06 at two weeks, and 1.16 at four weeks. At the second and fourth weeks, group I's costeffectiveness ratio was considerably lower than that of group II (P <0.05). We discovered that 3 patients in group I and 1 in group II experienced nausea, 1 in group I and 3 in group II experienced sedation, and 1 in group I and 4 in group II experienced dryness. In a prospective, randomised, double-blind, parallel, activecomparative controlled. 4-week experiment, Mahatme et al.[10] recruited 70 AR patients.

Patients needed to have a total nasal symptom score (TNSS) of 5 or above to meet the study's inclusion criteria. Montelukast-levocetirizine (10 mg and 5 mg) was given to one group of patients, while montelukast-fexofenadine (10 mg and 120 mg) was given to the other group of patients. The primary effectiveness parameter was the TNSS parameter. In both groups, TNSS evaluation from baseline to the fourth week demonstrated a significant difference (P < 0.05). The mean change in TNSS, 9.46, in the montelukastfexofenadine group was significant (P 0.05). In comparison to the montelukastfexofenadine group, the montelukastlevocetirizine group had a worse costeffectiveness ratio.

# Conclusion

We came to the conclusion that in patients with allergic rhinitis, the montelukast-

levocetirizine group performed better than the montelukast-fexofenadine group.

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