RESEARCH PAPER

Efficacy of Single Oral Dose of Ivermectin in the Treatment of Rosacea Associated with Demodex Mite Infestation

Aneeza Ilyas[1], Tariq Mahmood Malik[2], Hina Mazhar[3], Faiz ul Hassan Nawaz[4], Memooma Nadeem[5]

[1] FCPS PGR Dermatology Department of Dermatology, CMH Lahore
[2, 3,4,5] FCPS Classified Consultant Department of Dermatology, CMH Lahore
Correspondence to Dr. Aneeza Ilyas, aneezailyas4@gmail.com

Received: 5 May, 2026; Revised: 15 May,2026; Accepted: 15 June, 2026; Available Online: 5 July, 2026

ABSTRACT

Objective: To determine the outcomes of single oral dose of ivermectin for management of rosacea associated with demodex mite infestation

Study Design: Longitudinal study

Study place and period: Department of Dermatology, CMH Lahore from from 2 February to 2 May 2026.

Methodology: Eighty participants were enrolled from OPD and were examined for IGA score at presentation. Demodex mite count was done by standardized skin surface biopsy. Participants were prescribed oral ivermectin alone. Then participants were followed up every fourth week for three months for IGA score and Demodex mites count. If IGA score ≤2 was noted, then efficacy was labeled. All data was analyzed in SPSS v.25. Mean change in Demodex mites count was checked by using paired samples t-test, keeping P-value <0.05 was kept as level of significance.

Results: Total 80 participants were included with the mean age as 36.08 ± 11.75 years. There were 66.3% males and 33.8% females. At baseline, IGA was moderate in 41 (51.3%) cases and severe in 39 (48.8%) cases. After 3 months of oral ivermectin treatment, 54 (67.5%) participants achieved complete clearance and 23 (28.8%) had almost clear skin, while 2 (2.5%) had mild and 1 (1.3%) had moderate IGA level. Demodex mites count was reduced from 33.95 ± 14.17 to 1.48 ± 3.64 within 3 months of single oral dose of ivermectin ($p<0.05$). Out of 80 participants, efficacy was achieved in 77 (96.25%) cases.

Conclusion: Thus, single oral dose of ivermectin can be beneficial in clearance of demodex mite infestation and reducing rosacea.

Key words: *single oral dose, ivermectin, rosacea, demodex mite infestation, Investigator's Global Assessment*

How to cite this article: Ilyas A, Malik TM, Mazhar H, Nawaz FUH. Efficacy of single oral dose of ivermectin in the treatment of rosacea associated with *Demodex* mite infestation. Int J Drug Deliv Technol. 2026;16(72s): 1589-1592. DOI: 10.25258/ijddt.16.72s.177

Source of support: Nil.

Conflict of interest: None

INTRODUCTION

Although rosacea is a widespread facial dermatosis, its classification and characterisation are still up for debate, particularly with regard to its connections to demodicosis.[1, 2] It is currently thought that rosacea triggers (UV rays, heat, spicy-food, alcoholism, stress, and microorganisms) cause an uncontrollably cascading inherent and then, adaptive-immune response.[3, 4] The idea that this inflammatory response is a continuum that is present from the beginning of the disease, even when there are no obvious clinical indications of inflammation, is supported by recent histological and biochemical research.[5, 6] Rosacea is believed to be influenced by Demodex, a microscopic commensal bacteria that resides in or near sebaceous glands and hair follicles. Demodex is recognised to be an obligatory commensal organism that is host-specific, although it is currently challenging to cultivate in vitro so that it can parasitise and infect various animal hosts.[7]

Ivermectin and acaricidal drugs have been successfully used to treat demodicosis in a number of studies; however, there has never been a record of an ivermectin-resistant Demodex mite.[8] Common treatments for demodicosis include topica1 ivermectin, permethrin, tea tree oi1, benzy1 benzoate, 1indane, metronidazo1e, crotamiton, and oral drugs include metronidazo1e or ivermectin, or combination of both. Human demodicosis and rosacea linked to Demodex mite infestation have both been successfully treated with oral ivermectin.[9] Oral ivermectin has been shown in numerous cases to effectively cure rosacea and demodicosis linked to Demodex mite infestation.[10, 11]

The purpose of this study is to ascertain the effects of a single oral ivermectin dose in the management of rosacea linked to demodex mite infestation. Literature showed that oral ivermectin is an effective way to resolve demodex

**Author for Correspondence: aneezailyas4@gmail.com*

associated rosacea. However, limited work has been done on oral dose of ivermectin and no local evidence exist in literature. Due to lack of local evidence, usually topical treatments are prescribed for prolonged used, that is also associated with several side effects. Instead, oral signal dose has been found effective in >90% cases within 3 months. Therefore, we want to conduct this study to confirm whether single oral dose of ivermectin can replace other less effective drugs. This will help us to improve our practice and knowledge and in future, we will implement use of single oral dose of ivermectin in local population for management of demodex mite associated rosacea.

METHODS

After taking approval from Research Review Board (RRB letter number: 687/2025), this longitudinal study was done at the Department of Dermatology, CMH Lahore during from 2 February to 2 May 2026. Using of WHO calculator, sample size (n) was 80 cases that was estimated keeping 95% confidence level, 4.5% abso1ute precook required and percentage of efficacy as 95.6% with single oral dose of ivermectin.[12] Non-probability, consecutive sampling technique was set to enroll the individuals with demodex mite infection.

Inclusion criteria: Individuals of age 16-55 years, either gender diagnosed to have demodex mite infestation associated rosacea were enrolled. Rosacea was is defined as presence of prolonged skin condition described as presence of swelling, redness, with and without pimples, and small or superficial dilated blood vessels, caused by demodex mites present on skin, detected by standardized skin surface biopsy. Participants with IGA score >2 were enrolled in the study.

Table-1: Investigator's G1obal Assessment (IGA) scoring system

IGA Score	Severity	Clinical Description
0	Clear	No papules, pustules, or erythema. Virtually no signs of rosacea.
1	Almost Clear (Minimal)	Very few papules and/or pustules with minimal erythema.
2	Mild	Few papules and/or pustules with mild erythema.
3	Moderate	Several papules and/or pustules with moderate erythema.
4	Severe	Numerous papules and/or pustules with moderate to severe erythema.

Exclusion criteria: Pregnant or lactating women, or on oral contraceptive pills, with renal failure, liver disease, cardiac disease or bronchial asthma, having hypersensitivity to ivermectin or on warfarin medication, or other dermatological disorders (acne, psoriasis, etc.).

Informed consent was taken before enrolment and demographic details (name, age, sex, BMI, duration of rosacea, season, residence, diabetes, hypertension, smoking, family history of rosacea) were noted. By adding a drop of cyanoacrylate adhesive to a microscope slide, applying the adhesive-bearing surface of the slide to the skin for approximately 90 seconds, and then carefully removing it, the standardized skin surface biopsy (SSSB) method was used to count demodex mites. The biopsy material was then combined with two to three drops of regular saline. The location with the highest concentration of Demodex mites was identified by examining the sample under a low power (40×10) microscope. Over the chosen area, a blue circle with a diameter of around 10 mm was drawn to indicate the number of mites in a 1 cm^2 area. One oral ivermectin dose of 250µg/kg was prescribed for each participant. Then participants were followed up every fourth week for three months. After 3 months, participants were examined again for IGA score and Demodex mites count by using same method as used at baseline. If IGA score ≤2 was achieved, then efficacy was labeled. All this information was recorded on proforma.

All data was entered and analyzed in SPSS version 25.0. The quantitative variables i.e. age, BMI, duration of rosacea, Demodex mites count and IGA score (before and after treatment) were presented in the form of mean±SD. The qualitative variable i.e. gender, season, residence, diabetes, hypertension, smoking, family history of rosacea and efficacy were presented in the form of frequency and percentage. Mean change in Demodex mites count was checked by using paired samples t-test. P-value <0.05 was kept as significance level. Data was stratified for age, gender, BMI, duration of rosacea, season, residence, diabetes, hypertension, smoking, and family history of rosacea. Post-stratification, stratified groups were compared for efficacy by using chi-square test and for mean Demodex mites count by using independent samples t-test in each stratum. P-value <0.05 was kept as significance level.

RESULTS

In this study, total 80 participants were enrolled with mean age of 36.08 ± 11.75 years, indicating both younger and older adults are included. Majority were males (66.3%), with females making up about one-third (33.8%) of the whole sample. The mean BMI was 26.39 ± 5.15 kg/m^2, which falls into the obesity. On average, participants had the condition for about 6.64 ± 3.49 weeks, indicating relatively recent onset. Among all, diabetes was positive in 33 (41.3%) cases, hypertension in 26 (32.5%) cases, smoking in 31 (38.8%) and positive family history in 34 (42.5%) cases. Among all, mostly participants present during monsoon period, followed by summer 15 (18.8%) and spring 14 (17.5%). Winter and autumn had fewer cases (15% and 13.8%, respectively). Distribution is almost equal across rural (32.5%), urban (35%), and industrial areas (32.5%). Table-I

Table-I: Basic history and clinical parameters of participants (n = 80)

Variables	Output
Age, years	36.08 ± 11.75
Gender	
Males	53 (66.3%)

Females	27 (33.8%)
BMI, kg/m^2	26.39 ± 5.15
Duration of disease, weeks	6.64 ± 3.49
History of	
Diabetes	33 (41.3%)
Hypertension	26 (32.5%)
Smoking	31 (38.8%)
Family history of rosacea	34 (42.5%)
Season at presentation	
Winter	12 (15%)
Summer	15 (18.8%)
Spring	14 (17.5%)
Autumn	11 (13.8%)
Monsoon	28 (35%)
Residence	
Rural	26 (32.5%)
Urban	28 (35%)
Industrial area	26 (32.5%)

At baseline, IGA was moderate in 41 (51.3%) cases and severe in 39 (48.8%) cases. After 3 months of oral ivermectin treatment, 54 (67.5%) participants achieved complete clearance and 23 (28.8%) had almost clear skin, while 2 (2.5%) had mild and 1 (1.3%) had moderate IGA level. Demodex mites count was reduced from 33.95 ± 14.17 to 1.48 ± 3.64 within 3 months of single oral dose of ivermectin (p<0.05). Table-II

Table-II: Outcome of treatment during follow-up (n = 80)

		Baseline	After 3 months
IGA	Clear	0	54 (67.5%)
	Almost clear	0	23 (28.8%)
	Mild	0	2 (2.5%)
	Moderate	41 (51.3%)	1 (1.3%)
	Severe	39 (48.8%)	0
Demodex mites count		33.95 ± 14.17	1.48 ± 3.64*

Note: * = P-value <0.001

Out of 80 participants, efficacy was achieved in 77 (96.25%) cases. Figure-1

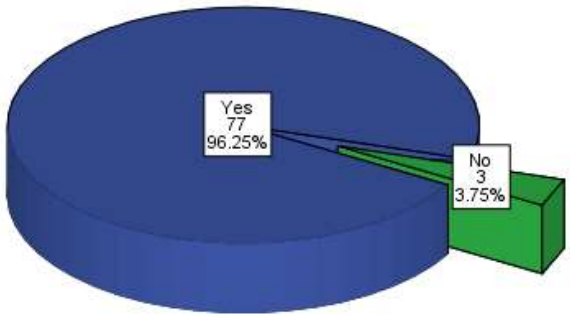

Figure-1: Clearance noted after sing1e ora1 dose of ivermectin (n = 80)

Data was controlled for effect modifiers including demographics and clinical history of participants. It was observed that efficacy was 100% achieved participants of age range 16-30 years, while in 93.9% of participants, who fell in age range above 30 years. Although the difference was insignificant (p>0.05). Similarly, efficacy was similar for both genders (50 (94.3%) for males vs. 27 (100%) for females, p>0.05). Obesity and duration of disease also showed no significant impact on efficacy of oral ivermectin in achieving complete clearance of rosacea (p>0.05). Similarly, medical history of diabetes and hypertension also had no impact on efficacy of oral ivermectin (p>0.05). Moreover, history of smoking, family history, residence and seasons also had no effect on efficacy of oral ivermectin in achieving complete clearance of rosacea (p>0.05). Table-III

Table-III: Clearance noted after sing1e ora1 dose of ivermectin when controlled for effect modifiers (n = 80)

		Efficacy		Significance
		Yes n = 77	No n = 3	
Age, years	16-30	31 (100%)	Nil	0.279*
	31-55	46 (93.9%)	3 (6.1%)	
Gender	Male	50 (94.3%)	3 (5.7%)	0.547*
	Female	27 (100%)	Nil	
BMI	Obese	43 (97.7%)	1 (2.3%)	0.585*
	Non-obese	34 (94.4%)	2 (5.6%)	
Duration of disease	≤6 weeks	36 (94.7%)	2 (5.3%)	0.602*
	>6 weeks	41 (97.6%)	1 (2.4%)	
Diabetes	Present	31 (93.9%)	2 (6.1%)	0.566*
	Absent	46 (97.9%)	1 (2.1%)	
Hypertension	Present	24 (92.3%)	2 (7.7%)	0.245*
	Absent	53 (98.1%)	1 (1.9%)	
Smoking	Positive	30 (96.8%)	1 (3.2%)	>0.999*
	Negative	47 (95.9%)	2 (4.1%)	
Family history of rosacea	Positive	33 (97.1%)	1 (2.9%)	>0.999*
	Negative	44 (95.7%)	2 (4.3%)	
Residence	Rural	25 (96.2%)	1 (3.8%)	0.998!
	Urban	27 (96.4%)	1 (3.6%)	
	Industrial area	25 (96.2%)	1 (3.8%)	
Season	Winter	12 (100%)	Nil	0.588!
	Summer	15 (100%)	Nil	
	Spring	13 (92.9%)	1 (7.1%)	
	Autumn	11 (100%)	Nil	
	Monsoon	26 (92.9%)	2 (7.1%)	

Note: * = Fisher exact test; = Chi-square test

DISCUSSION

In this study, we observed that the IGA was moderate in 41 (51.3%) cases and severe in 39 (48.8%) cases when cases present, while after 3 months of treatment, 54 (67.5%) participants achieved complete clearance and 23 (28.8%) had almost clear skin. In 2 (2.5%) cases mild and in 1 (1.3%) case moderate IGA level was observed. In this study, we achieved efficacy in 77 (96.25%) participants, indicating a high level of satisfaction with the treatment.

In a research, Sharara et al. found that a single oral dose of ivermectin was 95.6% effective within three months of therapy, and the mean Demodex mite count decreased from 10.38 ±2.9 to 4.96 ±2.6 ($p<0.05$).[12] These results are consistent with what we found in our investigation. In a related trial, Hamid et al. found that oral ivermectin considerably improved the symptoms of rosacea in 33.3% of individuals. Demodex mite counts, which significantly decreased after treatment compared to before treatment ($p<0.05$), demonstrated the reliability of this.[13]

Demodex mites and many other endoparasites and ectoparasites are all effectively combatted by the anti-parasitic drug ivermectin. It causes parasite paralysis and death by obstructing trans-synaptic chemical transmission via glutamate-gated anion channels. Because the blood-brain barrier prevents ivermectin from accessing its targets, which are solely found in the central nervous system, it is safe for humans.[9, 14]

Ivermectin is frequently used to remove the demodicosis, however research on its efficacy and suitable dosing schedule is lacking. Similar to how scabies is treated, reported individuals have received two oral doses of ivermectin at a dose of 200–250µg/kg, spaced a week apart.[15] In certain situations, the treatment plan called for repeated dosages administered two to five times every one to two weeks.[15, 16]

Papulopustular and erythematotelangiectatic rosacea have been shown to respond well to topical ivermectin. However, in addition to poor patient compliance because topical ivermectin required continuous daily application, side effects included burning, irritation, and pruritis. Oral ivermectin may improve patient compliance, enhance quality of life, and prevent skin irritation when used to treat rosacea.[17, 18]

In this study, we observed that mean demodex mites count was reduced from 33.95 ± 14.17 to 1.48 ± 3.64 within 3 months of single oral dose of ivermectin ($p<0.05$). According to Paichitrojjana and Chalermchai, 75% of participants showed excellent clinical improvement with a demodex count of less than 5 D/cm². Remission was attained by 50% of participants with a demodex count > 20 D/cm² and by all participants with a demodex count < 20 D/cm². Following oral ivermectin treatment, the median time to remission was 56 days for demodex count ≥ 20 D/cm² and 28 days for demodex count < 20 D/cm² ($p < 0.001$).[9] Ivermectin, however, is effective against adult Demodex mites but not their eggs, according to additional studies. The mite's half-life is only 36-hours, yet its life cycle takes 14–18 days from egg to larval stage and finally to adult stage. As a result, one oral ivermectin dose is insufficient. These results corroborate a prior study that recommended a minimum six-week course of treatment for demodicosis in order to cover two Demodex life cycles.[10, 19]

Holzchuh et al. administered two oral ivermectin doses (200 µg/kg) separated by seven days. Twenty-eight days following treatment, he noticed both a notable clinical improvement and a significant reduction in the total number of Demodex mites in the lashes.[20] Additionally, Noguera-Morel et al. evaluated the advantages and tolerability of ivermectin in fifteen children using a retrospective analysis rather than a clinical trial. After three months of follow-up, they found that 87.5% of patients treated with oral dose of ivermectin obtained comp1ete or a1most comp1ete c1earance (IGA 0-1).[21]

In this study, due to limited time frame and cost-effectiveness, we only followed-up the participants for 3 months and did not evaluate the participants for recurrence of the disease. However, demodex mite related rosacea has high risk of recurrence. Further studies should be done keeping in mind the risk of recurrence and more prolonged follow-up. Moreover, we did not evaluate the participants for topical treatment, if they were taking any herbal, allopathic or homeopathic topical cream or oil for irritation or pain. We also did not explore participants for exposure to sunlight and occupation and use of bedding (cotton or silk). These parameters can also affect the efficacy of ivermectin treatment.

CONCLUSION

Thus, single oral dose of ivermectin can be beneficial in clearance of demodex mite infestation and reducing rosacea. Now we have achieved a high efficacy rate of ivermectin for rosacea. Now in future, we will recommend to use single oral dose of ivermectin to treat the rosacea due to demodex mites and will replace other less effective drugs. This will help us to improve our practice and will also help to improve the patient's satisfaction level with the treatment

REFERENCE

1. Sánchez-Pellicer P, Eguren-Michelena C, García-Gavín J, Llamas-Velasco M, Navarro-Moratalla L, Núñez-Delegido E, et al. Rosacea, microbiome and probiotics: the gut-skin axis. Frontiers in microbiology 2024;14:1323644.
2. Yang F, Wang L, Song D, Zhang L, Wang X, Du D, et al. Signaling pathways and targeted therapy for rosacea. Frontiers in Immunology 2024;15:1367994.
3. Rhee MK, Yeu E, Barnett M, Rapuano CJ, Dhaliwal DK, Nichols KK, et al. Demodex blepharitis: a comprehensive review of the disease, current management, and emerging therapies. Eye & Contact Lens 2023;49(8):311-8.
4. Geng RS, Bourkas AN, Mufti A, Sibbald RG. Rosacea: pathogenesis and therapeutic correlates. Journal of Cutaneous Medicine and Surgery 2024;28(2):178-89.
5. Forton FMN. The Pathogenic Role of Demodex Mites in Rosacea: A Potential Therapeutic Target Already in Erythematotelangiectatic Rosacea? Dermatology and therapy 2020;10(6):1229-53.
6. Forton F. Rosacea, an infectious disease: why rosacea with papulopustules should be considered a demodicosis. A narrative review. Journal of the European Academy of Dermatology and Venereology 2022;36(7):987-1002.
7. Wei F, Li L, Kong Y, Yan X, Varghese KJ, Zhang S, et al. Evidence for the Clinical Association between Demodex and Rosacea: A Review. Dermatology

2023;240(1):95-102.
8. Paichitrojjana A, Paichitrojjana A. Successful treatment of ivermectin refractory demodicosis with isotretinoin and permethrin cream. JAAD Case Rep 2022;26:98-100.
9. Paichitrojjana A, Chalermchai T. Evaluating the Efficacy of Oral Ivermectin on Clinical Symptoms and Demode x Densities in Patients with Demodicosis. Drug Design, Development and Therapy 2024:5299-306.
10. Paichitrojjana A, Paichitrojjana A. Die-off reaction of Demodex mites after treating demodicosis with oral ivermectin: A case report. JAAD Case Reports 2024;52:1-3.
11. Salem DA-B, El-shazly A, Nabih N, El-Bayoumy Y, Saleh S. Evaluation of the efficacy of oral ivermectin in comparison with ivermectin–metronidazole combined therapy in the treatment of ocular and skin lesions of Demodex folliculorum. International Journal of Infectious Diseases 2013;17(5):e343-e7.
12. Sharara MA, Hamid KSA, Imam AA. Efficacy of single-dose oral ivermectin in treatment of rosacea in relation to demodex mites. Egyptian Journal of Dermatology and Venerology 2024;44(3):192-9.
13. El Din Abdel Hamid KS, Sharara M, Emam A. Efficacy of Oral Ivermectin in Treatment of Rosacea. QJM: An International Journal of Medicine 2024;117(Supplement_2).
14. Roche D, O'Connor C, Murphy M. Ivermectin in dermatology: why it 'mite'be useless against COVID-19. Clin Exp Dermatol 2021;46(7):1327-8.
15. Harahap Y, Salsabila S, Saputri FA. Development and. validation of ivermectin quantification method in volumetric absorptive microsampling using liquid chromatography-tandem mass spectrometry. Heliyon 2024;10(8).
16. Turkia M. A continuation of a timeline of ivermectin-related events in the COVID-19 pandemic. 2021.
17. Stein L, Kircik L, Fowler J, Tan J, Draelos Z, Fleischer A, et al. Efficacy and safety of ivermectin 1% cream in treatment of papulopustular rosacea: results of two randomized, double-blind, vehicle-controlled pivotal studies. Journal of drugs in dermatology: JDD 2014;13(3):316-23.
18. Schaller M, Gonser L, Belge K, Braunsdorf C, Nordin R, Scheu A, et al. Dual anti-inflammatory and anti-parasitic action of topical ivermectin 1% in papulopustular rosacea. Journal of the European Academy of Dermatology and Venereology 2017;31(11):1907-11.
19. Cheng AM, Sheha H, Tseng SC. Recent advances on ocular Demodex infestation. Current opinion in ophthalmology 2015;26(4):295-300.
20. Holzchuh FG, Hida RY, Moscovici BK, Albers MBV, Santo RM, Kara-José N, et al. Clinical treatment of ocular Demodex folliculorum by systemic ivermectin. American journal of ophthalmology 2011;151(6):1030-4. e1.
21. Noguera-Morel L, Gerlero P, Torrelo A, Hernández-Martín Á. Ivermectin therapy for papulopustular rosacea and periorificial dermatitis in children: a series of 15 cases. Journal of the American Academy of Dermatology 2017;76(3):567-70.