

# Comparative study of testing the efficacy of turnip extract water vs. warm salt bath in the symptomatic relief of chill blains

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## Abstract

**Hypothesis of study** Turnip extract warm water increases the efficacy of topical anti inflammatory medications in the treatment of Chill Blains.

**Background** Chill blains is a clinical presentation of vasoconstriction of small vessels of the extremities due to repeated exposure to extreme cold, resulting in painful toes , fingers, ear , nose and heels along with tenderness, erythema and blister formation. Turnips have long been used in ancient time and in the era of ayurvedic for curing multiple skin diseases as they have been known to be rich in nutrients particularly vitamin C and nitrates which act as vasodilators.<sup>1</sup> Turnips are rich in potassium, which help to eliminate sodium from the body which in turn causes vasodilation.

**Objective** To compare the efficacy of warm turnip extract water versus warm salt water soaks in the symptomatic relief of chill blains, over the course of three weeks, while using topical anti inflammatory medications.

**Methods** This study was conducted over a period of four months starting from November 2018 till February 2019 at the outpatient of dermatology department at Punjab Rangers Teaching Hospital, Lahore. A total number of 70 patients who presented to the skin OPD with chill blains were enrolled in the study and were divided into two equal groups. One group was taken as cases (35) & the other as controls (35). Cases were labeled Group A & controls were labeled Group B. The cases were advised to soak their feet in turnip extract water for fifteen minutes daily before bedtime, while the other group were taken as controls & advised daily warm saline soaks at night with 8 tablespoon of salt in 4 liters of warm water. To prepare the turnip extract, 1 kilogram of turnips were allowed to boil in approximately 4 liters of water until they were soft enough to mash and the water turned brown. Then the water was allowed to cool to a tolerable temperature. After soaking their feet for fifteen minutes in either water, both groups were advised to dry them with a piece of clean towel & then apply topical mixed anti-inflammatory creams. Patients were instructed to repeat these daily soaks along with the topical steroid preparation for three weeks and then followed up in the OPD after this time to compare the effectiveness of each. The variables that were assessed on the first follow up visit were pain, pruritus, erythema & edema.

**Results** Both Group A & Group B , cases and controls were observed for the response regarding the efficacy of turnip extract water versus saline soaks on the first follow up after three weeks. There was a very significant response among the case group compared to a variable response among the controls.

**Conclusion** The ayurvedic remedy of using warm turnip extract water does contribute towards

improving the efficacy of topical steroid preparation in comparison to the home remedy of saline soaks use with the same steroid anti-inflammatory preparation, in improving the pain, erythema, swelling & pruritus of chill blains.

**Key words**

Raynauds' syndrome, vasodilators, nitrates, chill blains.

**Introduction**

*What are Chill Blains?*

Chill blains also known as perniosis or pernio, is a condition which results due to change in temperature of the extremities particularly fingers, toes and often ear lobes and tip of nose in cold weather.<sup>2-4</sup> It results in the formation of itchy red plaques which give burning and tingling sensation, associated with swelling of the involved region. Chill blains can often lead to blister formation and continuous itching leads to ulceration of the affected skin.<sup>5</sup>

Chill blains are often confused with Raynaud's Syndrome which results in a similar clinical picture, but is caused by impaired circulation, aggravated by various factors such as nicotine consumption, stress, being female, anxiety, and cold weather.<sup>5,6</sup> Chill blains on the other hand are caused by impaired circulation in cold weather due to vasoconstriction<sup>6</sup>, and hence vasodilators are considered as a source of treatment before going on to aggressive approach.<sup>7</sup>

*How Turnips Help in Reducing the Symptoms Of Chill Blains?* Turnips belongs to the family of Brassicaceae which are known as ethnomedicinal plants. Ethnomedicine is the study of medicinal effects of bioactive compounds in treatments of various diseases.<sup>8</sup>

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Turnips have been used in ancient era as a source of treating cracked and torn skin, and in ayurvedic medicines for curing burns. Turnips are rich in micronutrients especially in vitamins B, C, glucosinolates<sup>9</sup> and nitrates. Turnips are rich in potassium, which help to eliminate sodium from the body which in turn causes vasodilation.<sup>1</sup> Turnips are great for metabolism and they are beneficial in increasing the blood circulation and the nitrates present in turnips are great for vasodilatation. Therefore keeping in view its nutrient value and its use in ancient medicine, these are helpful in patients suffering from vascular diseases as a consequence of vasoconstriction.<sup>9</sup> Nitrates present in turnips act as vasodilators and are therefore helpful in relieving the vasospasm of fingers and toes in chill blains and perniosis.<sup>10</sup> Vitamin C is essential for hydroxylation of collagen. Turnips are rich in vitamin C and vitamin B complexes which are beneficial for skin and helps to increase the production of collagen and in return heals the ulceration and blistering caused as a result of vigorous itching in chill blains.<sup>1</sup>

*Type of study* Case Control Single blinded study. Comparative study was conducted using a group of patients as control and half of the patients as case group.

*Variables of the Study* Four variables were taken into consideration which included itching, pain, swelling and erythema.

**Methods**

Total 70 patients presenting with chill blains aged 8 years & above of either gender (31 males & 39 females) were recruited in our study. 35

patients (14 males & 21 females) were taken as study subject (Case) and the remaining 35 patients (17 males & 18 females) were taken as control. It was a comparative study in checking the added efficacy of turnip extract water in the symptomatic relief of chill blains among patients who were treated with topical mixed anti-inflammatory medication which included Betamethasone along with gentamicin and a second generation anti histamine tablet of the same generic & trade.

Upon their first visit, the demographic data regarding age, gender, area of living, was obtained & at the same time, an informed consent was taken from the patients, explaining to them the purpose of study, the course of treatment & the procedure in detail to ensure compliance, thus avoiding bias. Four variables were brought under consideration naming pain, pruritus, erythema & edema. Detailed information about the onset, duration of disease & the severity of their symptoms of pain & pruritus was taken & the extent of erythema & swelling was also clinically assessed. Pain was graded according to Numerical Rating Scale NRS (0 to 10) & the patients were placed in no pain (0), mild pain (1 to 3), moderate pain (4 to 6) & severe pain scale (7 to 10). Pruritus was assessed according to visual analog scale with 0 as no pruritus, less than 3 as mild pruritic, 3 to 7 as moderate pruritus, 7 to 9 as severe pruritus & more than 9 as very severe pruritus. Similarly erythema was also graded as mild, moderate & severe based on both subjective & objective assessment. Edema was also graded as mild to moderate.

Regarding pain, out of total 70 patients of chill blains, 24 (34%) patients rated their pain in the scale of severe, 30 (42%) graded it in the moderate category while the remaining 16 (22%) had mild pain. After division into two groups, there were 12 (34%) patients with severe

pain, 15(43%) patients with moderate pain & 8 (23%) patients with mild pain in each group.

Out of total 70 patients, 30 (43%) patients complained of severe pruritus, 18 (26%) had moderate pruritus while the remaining 22 (31%) had mild pruritus. After division into two groups, there were 15 (43%) patients with severe pruritus, 9 (26%) patients with moderate pruritus & 11 (31%) patients with mild pruritus in each group.

Regarding erythema, out of total 70 patients, 12 (17%) patients had severe erythema, 34 (49%) patients had moderate erythema while the remaining 24 (34%) had mild erythema. After division into two halves 6 (17%) patients had severe erythema, 17 (49%) had moderate erythema & 12 (34%) had mild erythema.

Assessing edema, 44 (63%) patients had moderate edema while the remaining 26 (37%) had mild edema. After division into two equal halves, 22 (63%) patients had moderate edema while the remaining 13 (37%) had mild edema.

After allocation of 35 (50%) patients in each group as mentioned, Group A (cases) were asked to soak their feet in Turnip extract water daily at bedtime & the remaining half 50% (Group B) were advised to soak their feet in warm saline soaks and were taken as control group of the study. At the same time they were also advised topical mixed anti-inflammatory steroid preparation which was a combination of betamethasone with gentamicin along with a non sedating second generation antihistamine of the same generic & trade. Both the groups were called on the first follow up after three week time period & were assessed for improvement in all four variables.

**Results**

After a period of three weeks on the first follow up, both groups of patients were observed for the improvement in all four variables. A response of more than 50% was graded as good, between 30-40% as average and less than 20% as poor.

Regarding the first variable that was pain, 23 (66%) patients reported more than 50 % improvement which was considered a good response, 8 (23%) said an average & 4 (11%) a poor response. Among controls, 7 (20%) described a good response, 18 (51%) average & 10 (29%) showed poor response.

Inquiring about pruritus from the case group revealed that 22 (63%) patients had a good response with more than 50% improvement, 8 (23%) showed average & 5 (14%) a poor response. From control group, 7 (20%) showed good, 18 (51%) average while 10 (29%) a poor response.

Assessing the third variable that was erythema, 21 (60%) patients were categorized in good, 8 (23%) in average & 6 (17%) in a poor outcome, while in the control group, 16 (46%) showed good, 12 (34%) average & the remaining 7 (20%) poor response.

Concerning the last variable that was edema, from Case group 18 (52%) patients with moderate edema showed significant improvement with reduction in the swelling with a good response, 12 (34%) had an average &

remaining 5 (14%) had a poor response, while in the control group, 14(40%) showed good, 11 (31%) average & 10 (29%) poor response.

**Discussion**

Statistical Analysis was carried on the data collected through the study. Alpha significance point was kept to be 0.05. The P value of significance of our data using SPSS statistical analysis came out to be less than 0.05 which proves the hypothesis that is “Turnip extract warm water increases the efficacy of Topical anti inflammatory medications in the treatment of Chill Blains”.

*Flaws in our Study* As this study was observation based, there is a possibility of few errors.

- First of all there is probability that the patients under observation might not be

**Table 1** Frequency distribution of patients according to sex

Sex	Frequency	Percentage
Male	31	44%
Female	39	56%
Total	70	100%

**Table 2** Frequency distribution of patients according to age

Age	Frequency	Distribution
8-18	19	27%
18-28	29	41%
28-38	11	16%
38-49	11	16%
Total	70	100%

**Table 3**

Variable	No. of patients	Good >50%	Average 30-40%	Poor <40%	p-value
Cases	35	23 (66%)	8 (23%)	4 (11%)	0.021
Control	35	7 (20%)	18 (51%)	10 (29%)	
Cases	35	22 (63%)	8 (23%)	5 (14%)	0.014
Control	35	7 (20%)	19 (51%)	10 (29%)	
Cases	35	21 (60%)	8 (23%)	6 (17%)	0.001
Control	35	16 (46%)	12 (34%)	7 (20%)	
Cases	35	18 (52%)	12 (34%)	5 (14%)	0.001
Control	35	14 (40%)	11 (31%)	10 (29%)	

compliant to the method and hence it could affect the efficacy of the treatment.

- The amount of turnips used in the study can also vary from patient to patient and hence can hinder the treatment.
- Patient might be biased while telling us about their improvement in the treatment. Children under observation are often unsure about the amount of improvement they had seen while being in treatment.
- There isn't much research conducted on the efficacy of turnips extract water and the Brassicaceae family hence much references could not be taken into consideration.

### **Conclusion**

Thus from the results of present study, it can be concluded that Turnip extract water adds to the effect of topical anti inflammatory medications in the treatment of chill blains.

Chill blains is a very painful & distressing disease which causes great agony to its sufferers. Despite surfing the literature, not much could be found about the effect of the turnip extract remedy on the chill blains. Therefore it was highly desired to work on the relevance of this hypothesis, as to how much this remedy actually adds to relieve the symptoms of this disease. The rationale of our study was to do a factual visualization of the effect of turnip extract in relieving the pain & the discomfort of chill blains & that if was proven to be effective, it

could be introduced into the aiding therapy to the usual treatment of this disease.

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