



STUDY ON EFFECTIVENESS OF *HIK POTHU KETAKELADHI* PASTE FOR ANKLE SPRAIN (ULUKKUWA)

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ABSTRACT

*Sprain emerged in society as a prominent disease at the present. Sprain is an injury to the soft tissue around joint, muscles, ligaments and tendons which are attached to bones, serve both to move them and to hold them in place, an injury to soft tissues surrounding of joints, with stretching and tearing or partial tearing of muscles, ligaments, tendons and blood vessels. The life of the people affected by such disorders become so impaired and severely disabled that they may not be able to perform their routine work and causes inefficiency of the person and it may affect the economy of the country. Demanding lifestyle has boosted the incidence of soft tissue injury. Aim of the study is to role of Hik Pothu Ketakeladhi Paste ((Indigenous paste) in the effect of ankle sprain as an external application. 30 patients of Ankle sprain were selected from OPD, Ayurveda Teaching Hospital, Borella and private medical centre based on the diagnostic, inclusion and exclusion criteria. Stem bark of Hik Pothu (stem bark of *Calesiam grande Kuntze*), Kahata pothu (stem bark of *Careya arborea*), Ketakela pothu (stem bark of *Brideliaretusa*), Magul karada pothu (stem bark of *Pongamia pinnata*), Madan pothu (stem bark of *Calyptanthus capitellata*), Amu kaha ala (Rhizome of *curcuma longa*), Wada kaha (*Acorus calamus*) Viyandunbulu (powder of Soot), Ran kubalmatti (Powder of wasp's residence), Kithulpeni (*Caryota urens*) and Meepeni (Bees honey) present in this paste. The paste was applied at the affected site twice daily for 15 days and removed before it dried. Assessment was done every 07 days. Age distribution showed 40% them belongs to age group of 51-60 years with male predominance of 60%. Occupation wise labourer ranked more. Mode of injury dominates 37% of them had unusual bending due to wearing high heel and patients 63.3% of them had first degree ankle sprain. The study showed percentage of improvement in the clinical features of ankle sprain as pain by 100%, tenderness by 89%, swelling by 83%, Loss of function 1.75 and discolouration by 92%. All the sign and symptoms were gradually reduced at the end of 15 days. Treatment of Hik Pothu Ketakeladhi Paste and they were statistically significant at the level of $P < 0.0001$. Hik Pothu Ketakeladhi Paste provided significant relief in the signs and symptoms of the ankle sprain. Therefore, Hik Pothu Ketakeladhi Paste can be used as sprain (Ulukkuwa).*

KEYWORDS: Hik Pothu Ketakeladhi Paste, ankle sprain (Ulukkuwa), soft tissue injury

INTRODUCTION

Ankle sprain is an injury to the soft tissue around joints, muscles, ligaments and tendons which are attached to bones, serve both to move them and to hold them in place, which may occur during sports activities, an accident, particularly during heavy physical activity, sudden twisting of the joint or fall. Sprain can be equated to that of 'Ulukku' in Traditional Medicine. Nowadays Ulukkuwa (sprain) emerged in society as well-known disease. Demanding lifestyle has boosted the incidence of trauma/soft tissue injury. One among such conditions is Ankle sprain is majority as 75%. 1% to 2% people per day necessitate medical care for ankle sprains including athletes and non-athletes. When a joint gets bent, harming the ligaments that associate the bones in the joint. Ankle sprains can be caused by running or strolling on uneven ground, wearing high-heel shoes, lifting substantial weights. When the person is affected with ankle sprain, he/she became so impaired and may not be able to perform their routine work. Sprain is an

injury to soft tissue around joint, muscles, ligaments and tendons which are attached to bones, serve both to move them and to hold them in place. Ulukkuwa (sprain) is a minor disruption in the joint capsule, including ligaments usually acute and denotes macroscopic tears in the collagen and elastin structure of the joint tissues. Ulukku (sprain) is due to a sudden twisting of the joint, soft tissues surrounding joints with stretching and sometimes tearing or partial tearing of muscles, ligaments, tendons and blood vessels. In a sprain, muscles, ligaments and tendons and blood vessels as well are stretched. Ulukkuwa (sprain) is a stretched or torn ligament, tendons and blood vessels as well as it may be bruising, inability to move the affected joint. Ulukkuwa (sprain) is a stretched or torn ligament, it happens when a joint gets bent, harming the ligaments that associate the bones in the joint. In Ayurveda, the ligament is associated with *Mamsa Dhatu*. Ligament injury causes an imbalance in the *Vata* and *Pitta doshas* and is usually caused by external factors such as unexpected



events. The symptoms of ankle sprain include pain and swelling, discomfort in the area making the joint partially or fully immobile. Side effects may include misery, swelling, wounding and limited of movement. Overuse of muscles or muscle fatigue, sudden increase in the amount and intensity of physical training, sports equipment which are used in wrong way, Wearing shoes that do not fit or are not well suited for the activities are the factors which are risk for a sprain of ligaments. External application of medicinal drugs is the choice of treatment in soft tissue injurie like ankle sprain. As ankle sprain affects the soft tissue injurie, *Lepa* is more rational and for cleansing the *marga avarodha* of perticular site and act as Pitta doshas and *mamsa*. *Acharya Sushruta* has mentioned the treatment as *Lepana* is of *Shodhana* type, best way to management of *Samprapti* of *Ulukkuwa* (sprain).

At present various types of treatments are available for ankle sprain.. In Ayurveda Medical system has lot of successful treatments are advised for *Ulukkuwa* (ankle sprain). But unfortunately, no scientific study has been carried out to prove the efficacy of the suitable drug yet. Most of drugs which are advised for ankle sprain have contained *Asthi sandhana* ingredients. The present study, *Hik Pothu Ketakeladhi Paste* is used as drug of choice for ankle sprain.

OBJECTIVE OF THE STUDY

Role of *Hik Pothu Ketakeladhi Paste* ((Indigenous paste) in the effect of ankle sprain as an external application.

MATHADODOLOGY OF THE STUDY

Study design

The study is exclusively clinical and patients were selected at random from two places; OPD, Ayurveda Teaching Hospital and private Medical Centre (“*Veda Gedara*” of traditional Physician whose tradition is followed), As soon as the patients were registered, a detailed history was taken and complete physical examination was done following a proforma prepared exclusively for the present study. Final diagnosis was confirmed radiologically.

Sample size- 30 patients.

Criteria for Diagnosis

Diagnosis was done radiological image with loss of function of the ankle joint, pain, tenderness, swelling, and joint stiffness and radiologically absence of fracture or dislocation.

Criteria for Inclusion

1. Diagnosed cases of first and second grade ankle sprain, absence of simple fracture or dislocation.
2. Both of the sex in the age group 20 to 60 years.
3. Recent onset, less than two weeks

Criteria for Exclusion

1. Patients associated with third grade and simple fracture or dislocation.
2. Patients below 20 years and above 60 years of age.

3. Chronicity more than two weeks.
4. Simple fracture and dislocation

MATERIAL AND METHODS OF TEST DRUG

Ingredients of *Hik Pothu Ketakeladhi Paste*

Hik Pothu (stem bark of *Calesiam grande Kuntze*), *Kahata pothu* (stem bark of *Careya arborea*), *Ketakela pothu* (stem bark of *Brideliaretusa*), *Magul karada pothu* (stem bark of *Pongamia pinnata*), *Madan pothu* (stem bark of *Calyptanthus capitellata*), *Amu kaha ala* (Rhizome of *curcuma longa*), *Wada kaha* (*Acorus calamus*) *Viyandunbulu* (powder of Soot), *Ran kubalmatti* (Powder of wasp’s residence), *Kithulpeni* (*Caryota urens*) and *Meepeni* (Bees honey).

Method of preparation of *Hik Pothu Ketakeladhi Paste*

The method of preparation of *Hik Pothu Ketakeladhi Paste* was prepared by using *Lepa paribasha* in *Sarangadara Samhita*. *Hik Pothu* (stem bark of *Calesiam grande Kuntze*), *Kahata pothu* (stem bark of *Careya arborea*), *Ketakela pothu* (stem bark of *Brideliaretusa*), *Magul karada pothu* (stem bark of *Pongamia pinnata*), *Madan pothu* (stem bark of *Calyptanthus capitellata*), *Amu kaha ala* (Rhizome of *curcuma longa*), *Wada kaha* (*Acorus calamus*) were taken in equal quantity, added one bottle of warm water and pounded in these ingredients. After squeezing and juice was obtained. Then the mixture boiled till half amount. 20 mg of each ingredient of pieces of *Amu kaha ala* (Rhizome of *curcuma longa*), pieces of *viyandunbulu* (powder of Soot), *Ran kubalmatti* (Powder of wasp’s residence) and 20 ml of *Kithulpeni* were added in to the juice and boiled it until sticky form (paste). 20 ml of *meepeni* (Bees honey) added and mixed well when apply on the affected site.

Intervention of *Hik Pothu Ketakeladhi Paste*

Hik Pothu Ketakeladhi Paste is applied externally to the affected ankle according to the norms of the *ardha maheesha charma* (0.25 cm), and kept it till cracks were noted. This *Lepa* was applied twice daily for a period of fifteen days. All the patient was advised for bed rest.

Criteria for Assessment

Changes of the clinical features like pain, tenderness, swelling, discolouration, joint stiffness carried out based on grading given to subjective and objective parameters were measured. Assessment was done every fifth day for fifteen days. Effect of the treatment was evaluated on the basis on changes of subjective and objective parameters. A scoring method was used to evaluate the effect of the test drug.

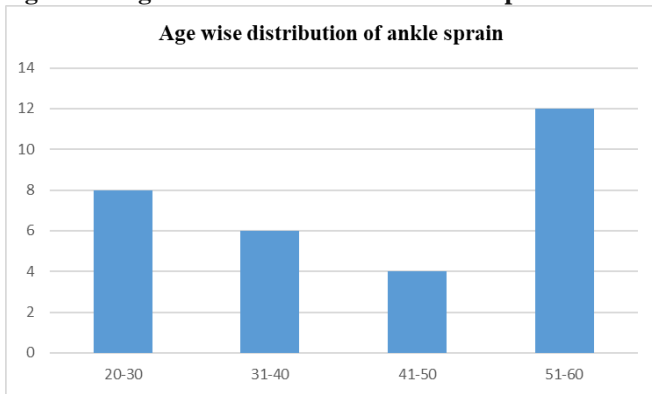
Assessment Criteria of the total effects of the therapy

Assessment of the effect of therapy was done on the basis of score given to the changers of the signs and symptoms. The different between score before treatment and after treatment was calculated and percentages were coincided to calculate the effect of drug under five categories such as complete healed, markedly improved, moderate improved, mild improved and unchanged.



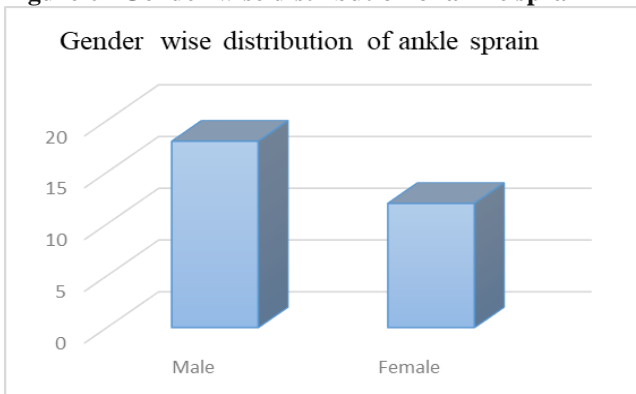
OBSERVATION OF THE STUDY

Figure 01 Age Wise Distribution of Ankle Sprain



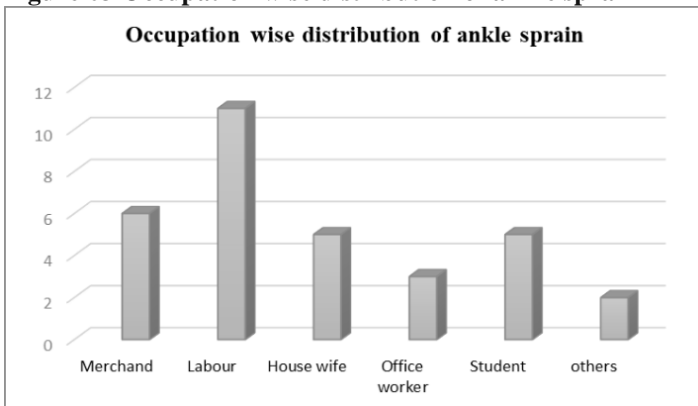
In the series of 30 patients 40% of them belong to age group of 51-60 years.

Figure 02 Gender wise distribution of ankle sprain



In the series of 30 patients 60% of them belong to male patients.

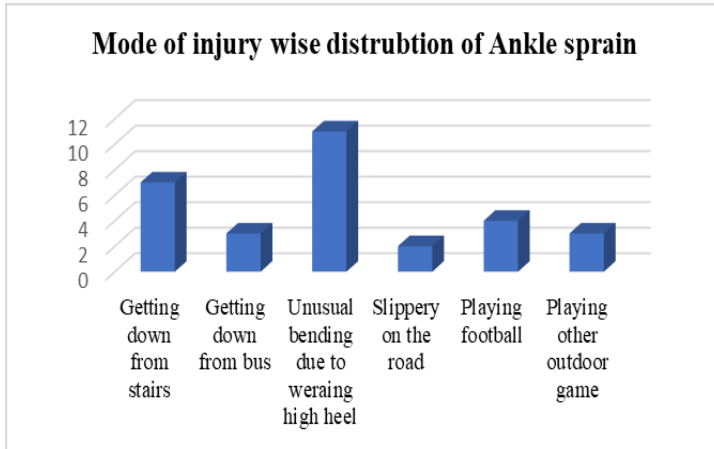
Figure 03 Occupation wise distribution of ankle sprain



In the series of 30 patients 37% of them had labourer.

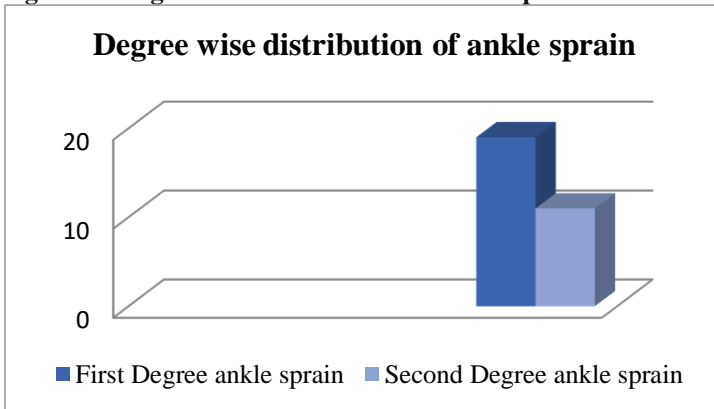


Figure 04 Mode of Injury



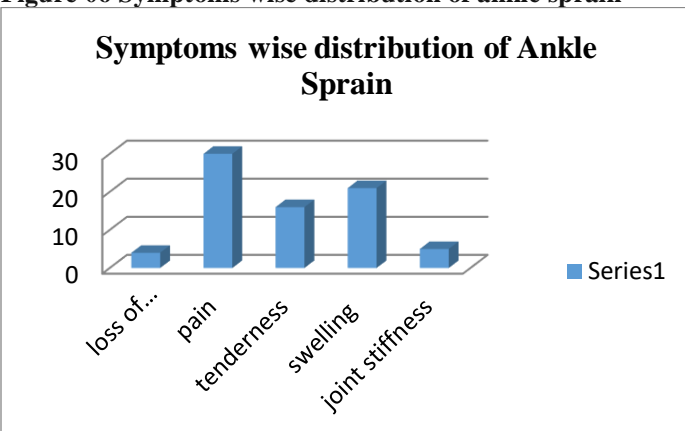
In the series of 30 patients 37% of them had unusual bending due to wearing high heel

Figure 05 Degree wise Distribution of ankle sprain



In the series of 30 patients 63.3% of them had first degree ankle sprain.

Figure 06 Symptoms wise distribution of ankle sprain



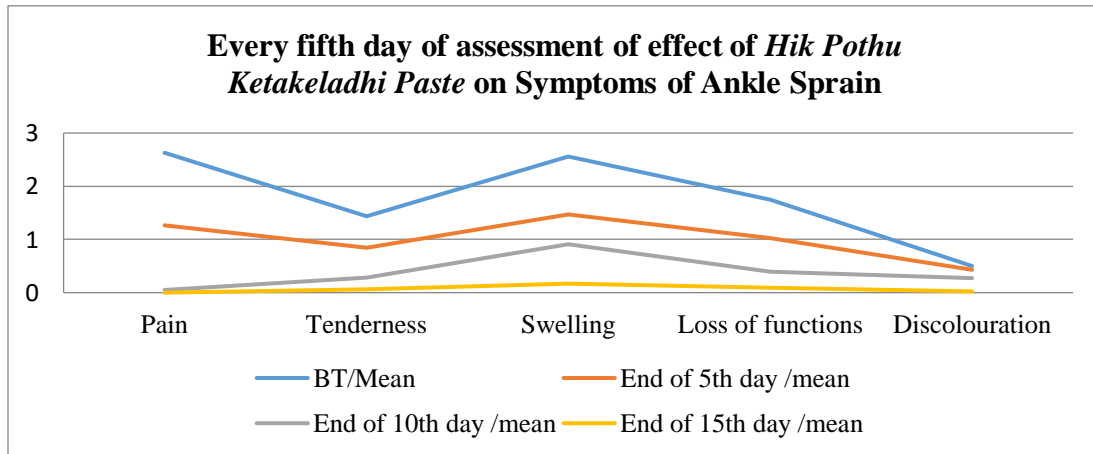
In the series of 30 patients 63.3% of them had first degree ankle sprain.



RESULTS OF THE CLINICAL TRAIL

Table 01. Every fifth day of assessment of effect of *Hik Pothu Ketakeladhi Paste* on Symptoms of Ankle Sprain

Symptoms	BT/Mean	End of 5 th day /mean	End of 10 th day /mean	End of 15 th day /mean
Pain	2.63	1.27	0.05	0.00
Tenderness	1.44	0.84	0.28	0.06
Swelling	2.56	1.47	0.91	0.17
Loss of functions	1.75	1.02	0.39	0.09
Discolouration	0.50	0.43	0.27	0.02



Before treatments mean score of pain, Tenderness, swelling, Loss of functions and discolouration steadily reduction was observed. At the end of 15th day, every symptom gradually

decreased and the mean scores were 0.00, 0.06, 0.17, 0.09 and 0.02 respectively.

Table 01. Statically analysis showing the result on clinical features after fifteen days’ treatment with *Hik Pothu Ketakeladhi Paste*.

Symptoms	Mean score		SD ±	SE ±	P value
	BT	AT			
Pain	2.63	0.00	0.43	0.11	0.001
Tenderness	1.44	0.06	0.41	0.12	0.001
Swelling	2.56	0.17	1.01	0.21	0.001
Loss of function	1.75	0.09	0.61	0.14	0.001
Discolouration	0.56	0.02	0.50	0.02	0.001

Values are significant at P< 0.0001

Table 01 showing the percentage of improvement in the clinical features of ankle sprain as pain by 100%, tenderness by 89%, swelling by 83%, Loss of function 1.75 and discolouration by

92%. All the sign and symptoms were gradually reduced at the end of 15 days. Treatment of *Hik Pothu Ketakeladhi Paste* and they were statistically significant at the level of P< 0.0001.

Table 02- Statically analysis showing the results of Loss of function after fifteen days of treatment with *Hik Pothu Ketakeladhi Paste*.

Symptoms	Mean Score		% of relief	SD ±	SE ±	P value
	BT	AT				
Dosiflexion	0.50	0.22	0.43	0.11	1.83	0.50
Plantarflexion	0.56	0.20	1.01	0.21	2.05	0.56
Inversion	0.78	0.31	0.67	0.14	1.98	0.78
Eversion	0.98	0.16	0.02	0.11	1.30	0.98

Values are significant at P< 0.0001

Table 01 showing the percentage of improvement in the clinical features of ankle sprain as pain by 100%, tenderness by 89%, swelling by 83%, Loss of function 1.75 and discolouration by 92%. All the sign and symptoms were gradually reduced at the

end of 15 days. Treatment of *Hik Pothu Ketakeladhi Paste* and they were statistically significant at the level of P< 0.0001.



DISCUSSION OF THE STUDY

Gulpamarma is present at the junction of pada and jangha. It is rujakaramarma and produces the symptoms as ruja, stabdhata and khanjata when injured. Ankle sprain is mainly caused by inversion (85%). Most commonly anterior talo-fibular ligament followed by calcaneo-fibular ligament.

The *Hik Pothu Ketakeladhi Paste* found to accelerates the healing process according to the observation and results. The ingredients of the *Hik Pothu Ketakeladhi Paste*, possess the property of Sohsrana, Ropana, Stambana, Sandhanakara. Therefore, the exhibited acceleration of healing process can be attributed to the above action of the ingredients of the *Hik Pothu Ketakeladhi Paste*. Most of ingredients possess Kashaya rasa, which assist in Ropana and Sandhana for union of the broken edges of the area of sprain. Kitul honey which has Madhura rasa provide the nourishment to the affected tissue to regenerate.

CONCLUSION OF THE STUDY

Hik Pothu Ketakeladhi Paste provided significant relief in the signs and symptoms of the ankle sprain. Therefore, *Hik Pothu Ketakeladhi Paste* can be used as sprain (Uluksuwa).

REFERENCES

1. *Sushruta Samhita, Hindi commentary by KavirajAmbika Dutta Shastri, 5th Edition, 1982, Chaukhamba Sanskrit Series, Varanasi. (Su. Ni. 13/32-33)*
2. *Chakradatta: Chakrapanidatta, Hindi Commentary by Jagadishwar Prasad. Tripathi, 4th Edition, 1976, Chaukhamba Sanskrit Series, Varanasi. (Chakrapani -Ch.Chi. 26/132)*
3. *Sushruta Samhita: Hindi commentary by KavirajAmbika DuttaShastri, 5th Edition, 1982, Chaukhamba Sanskrit Series, Varanasi. (Su.Ni. 13/32-33)*
4. *Sushruta. Susruta Samhita, edited with AyurvedaTattovaSandipika Hindi commentary by KavirajaAmbhikauttaShastri, Volume 1, Chaukhambha Sanskrit Sansthan, Varanasi. '*
5. *AshtangaSamgraha: Vagbhatt, Edited by Atri Dev Gupt, Chaukhamba Sanskrit, Series, Varanasi. (A.S. Ut. 27)*
6. *Srikantha Murthy K.R, Ashtangasangraha of vagbhatta, chikithsastana 22nd chapter, shloka 9-10, Chaukhambavisvabharati, PP 513*
7. *ChakrapaniDatta (1994), Chakradatta with Vaidya Prabha, Hindi Commentary edited by RamnathDwividy, Varanasi, Chaukhambha Sanskrit, Sansthana, Varanasi, pp.344*
8. *Srikantha Murthy K. R. astangahrdaya, chikitsastana 21st chapter, shloka 57-58, ChaukhambaVisvabharati, Varanasi.*