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A CLINICAL STUDY TO EVALUATE THE EFFECT OF *NIRGUNDYADI TAILA* AND *RASNAADI GUGGULU* IN THE MANAGEMENT OF *KARNA NADA* W.S.R. TO TINNITUS

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ABSTRACT

Karna Nada is an important disorder of the auditory system described under *Karna Rogas* in Ayurvedic classics, characterized by the perception of abnormal sounds in the ear without any external source. The condition is primarily attributed to *Vata Dosha* vitiation affecting the *Karna Srotas*, often associated with *Dhatu Kshaya*, mental stress, excessive sound exposure, ageing and improper dietary habits. Classical texts including *Charaka Saṃhita*, *Sushruta Saṃhita*, and *Ashtanga Hridaya* describe various types of *Nada* based on the nature of the perceived sound and the predominance of *Doshas*. Clinically, *Karna Nada* shows close resemblance to Tinnitus as described in modern otology. Owing to the lack of a definitive and recurrence-preventive management approach, the present study was undertaken to evaluate the efficacy of *Nirgundyadi Taila* and *Rasnaadi Guggulu in the* management of *Karna Nada*. **Methods:**30 patients suffering from Tinnitus (*Karna Nada)* were selected from Shalakya Tantra O.P.D/IPD of RGGPG Ayurvedic College& Hospital, Paprola, H.P. were randomly selected and grouped in three groups, where Group I received *Nirgundyadi Taila*, Group II received *Rasnaadi Guggulu* and Group III received both the Drugs for a period of 15 days. Results: The responses of both the groups were assessed clinically after 15 days of treatment. There was a statistically significant change ($p < 0.001$) in the overall signs and symptoms of *Karna Nada*. **Conclusion:** The final evaluation proved that all the groups were statistically significant but Group III with combination of both drugs is better in reducing the signs and symptoms of *Karna Nada*.

KEYWORDS: *Karna Nada*, Tinnitus, *Nirgundyadi Taila, Rasnaadi Guggulu.*

INTRODUCTION

Ayurveda is regarded as one of the most ancient and divine systems of medicine, believed to be the first structured medical science known to humanity. It was systematically memorized and documented by the originator *Brahma*, and is considered a branch of the *Atharvaveda*. According to classical *Ayurvedic* texts such as *Kashyapa Samhita*[1], *Ayurveda* is recognized as the *Panchama Veda*—the fifth *Veda*. The foundational principles of *Ayurveda*, as compiled by ancient sages, are considered timeless and were established through deep logical inquiry and systematic observation.

The global relevance of *Ayurveda* today is largely attributed to its holistic approach, which promotes a positive and balanced lifestyle. Ayurveda is traditionally divided into eight major clinical branches, each addressing a specific aspect of health and disease. One such branch, known as *Shalakya Tantra*[2], specifically deals with diseases that affect regions above the clavicle,

including disorders of the ears, eyes, nose, throat, and head.

In contrast, *Ayurveda* offers a systematic and holistic approach to the treatment of Tinnitus, referred to as *Karna Nada*. According to Ayurvedic principles, vitiated *Vata Dosha* is identified as the primary pathogenic factor in the manifestation of *Karna Nada*. The *Ayurvedic* model emphasizes restoring *Doshic* balance and targeting the root cause, rather than merely masking the symptoms.

Tinnitus, defined as the perception of sound in the absence of any external auditory stimulus, is a common auditory symptom affecting a significant portion of the population. Epidemiological studies estimate the prevalence of Tinnitus to range between 10–15%, equating to approximately 30-40 million individuals[3] globally. Among these, 8.5% report Tinnitus-related symptoms, while 8.9% experience Tinnitus as a standalone condition.

Nidanas* of *Karṇanada

A comprehensive discussion on the etiological factors of the 28 types of *Karṇa Rogas* can be found in the 20th chapter of *Sushruta Samhita*[4] and in *Aṣhṭanga Hṛidaya.*[5]

Samprapti

(*Vataj) Nidana Sevana*

↓

Vata Prakopa

↓

Vimargagamana of the *Vata* in the *Shabdavaha Shrotas*

↓

Produces different types of sounds in the ear like *Bheri, Mrudanga, Shanka* etc.

↓

Karna Nada

Samprapti Ghatakas

Dosha - *Vata*
Dushya - *Karnagata Siras, Rasa*
Shrotas - *Shabdavaha*
Adhishtana - *Karna*
Rogamarga - *Madhyama*
Sanchara Sthana - *Sarva Sharira (Vatavaha Nadi)*
Vyakta Sthana - *Karna*
Udhbavasthana - *Koshta*
Prabheda - *Karnanada* is only one type.
Lakshanas - Different types of sounds like *Bheri, Mrudanga* etc. are heard. The sound which resembles *Shankha* is heard.

Complications: If *Karna Nada* is not treated it leads to *Badhirya.*[6]

AIMS AND OBJECTIVES

1. To evaluate the effect of *Nirgundyadi Taila* in the management of *Karna Nada* w.s.r. to Tinnitus.
2. To evaluate the effect of *Rasnaadi Guggulu* in the management of *Karna Nada* w.s.r. to Tinnitus.
3. To evaluate the effect of *Nirgundyadi Taila* in combination with *Rasnaadi Guggulu* in the management of *Karna Nada* w.s.r. to Tinnitus.
4. To compare the efficacy of *Nirgundyadi Taila* and *Rasnaadi Guggulu* in the management of *Karna Nada* w.s.r. to Tinnitus.
5. To study the untoward effects of drugs if any.

MATERIAL AND METHODS-

Study design: A randomized clinical study.

The study was approved by Institutional ethics committee letter no. Ayu/IEC/2023/1372 Dated on 17/11/2023. The Clinical trial was registered under CTRI No. CTRI/2024/08/072858.

Drug Review: In this study, *Nirgundyadi Taila* and *Rasnaadi Guggulu* were selected.

Table no.1- Ingredients of *Nirgundyadi Taila.*[7]

Sr. No.	Name of plant	Botanical name	Family	Part Used	Composition
1.	*Nirgundi*	*Vitex negundo* Linn.	Verbenaceae	Leaf	1 part
2.	*Jati*	*Jasminum officinale Linn.*	Oleaceae	Leaf	1 part
3.	*Arka*	*Calotropis procera (Ait)R.Br.*	Asclepiadaceace	Leaf	1 part
4.	*Bhringraja*	*Eclipta alba Hassk*	Asteraceae	*Panchang*	1 part
5.	*Rasona*	*Allium sativum Linn.*	Alliaceae	*Kand*	1 part
6.	*Karpasa*	*Gossypium herbaceum Linn.*	Malvaceae	Seed	1 part
7.	*Shigru*	*Moringa oleifera Lam.*	Moringaceae	Seed	1 part
8.	*Tulsi*	*Ocimum sanctum Linn.*	Lamiaceae	Leaf	1 part
9.	*Karvellaka*	*Momordia charantia Linn.*	Cucurbitaceae	*Panchang*	1 part
10.	*Vatsnabha*	*Aconitum ferox Wall ex Seringe*	Ranunculaceae	Root	1/4part
11.	*Adraka*	*Zingiber officinale Roxb.*	Zingiberaceae	Rhizome	1 part
12.	*Tila*	*Sesamum indicum Linn.*	Pedaliaceae	*Murchita Tila Taila*	4 part
13.	*Kadali*	*Musa paradasica*	Musaceae	Leaf	1 part

METHOD OF PREPARATION OF *NIRGUNDYADI TAILA.*

The raw *Dravyas* required for the preparation were first cleaned and coarsely powdered using a pulverizer. *Tila taila* was subjected to *Murchana* as per classical references to enhance its therapeutic efficacy and shelf life. After *Murchana*, the oil was filtered and kept ready for further processing.The *Murchita Taila* was then combined with the prepared *Kashaya Dravya* and *Kalka Dravya* as per the classical *Taila Paka Vidhi*. The mixture was heated over mild fire and stirred continuously until the attainment of appropriate *Taila Paka Lakṣaṇa* (classical signs of proper oil processing). Upon completion, the oil was filtered using a clean cloth to remove any residual particles.The final medicated oil was packed in suitable containers and labeled properly for storage and further use.

B.No.-R-23/24

M.F.D:- 19-09-2024

2. *Rasnadi Guggulu*

Table no.2: Ingridients of *Rasnaadi Guggulu*[8]

Sr.no.	Common name	Botanical name	Famiy	Part used	Composition
1.	*Rasna*	*Pluchea lanceolata* C.B.Clarke	Asteraceae	Leaf	1 part
2.	*Guduchi*	*Tinospora cordifolia* Willd Miers ex Hook f.&Thoms	Menispermeaceae	Stem	1 part
3.	*Erand*	*Ricinus communis* Linn.	Euphorbiaceae	Root	1 part
4.	*Devdaru*	*Cedrus deodara* (Roxb.)Loud.	Pinaceae	Kandsar	1 part
5.	*Shunthi*	*Zingiber officinale* Roxb.	Zingiberaceae	Rhizome	1 part
6.	*Shudh Guggul*	*Commiphora mukul* (Hook ex Stocks)Engl.	Burseraceae	Extract	5 part
7.	*Ghee*				According to the need

Preparation Procedure of *Rasanadi Guggulu*

For the preparation of *Rasanadi Guggulu*, all the raw materials were collected and authenticated as per classical standards.

The ingredients were first dried thoroughly in the drying shed to eliminate any moisture content. After sufficient drying, the raw drugs were coarsely powdered.

The powdered material was subjected to *Bhavana* using *Goghṛita* and *Ardraka Svarasa* (fresh ginger juice) over several days.

This process was carried out meticulously to ensure proper mixing and enhancement of therapeutic potency.

Once the mass attained the desired consistency, it was shaped into uniform-sized tablets (*Vati*). These were then dried under shade, polished, and again dried to remove any residual moisture.

After complete drying, the *Rasanadi Guggulu* was packed, sealed and labelled properly for use in clinical study.

B.No.-49/24

M.F.D.- 21-01-2025

Subjects: 30 patients fulfilling diagnostic criteria of *Karna Nada* were registered from OPD/IPD of Deptt. of Shalakya Tantra, RGGPG Ayurvedic College & Hospital Paprola, 30 patients completed the trial.

4.Criteria of Selection of Disease

Approximately 50% of the patients coming to the *Shalakya Tantra* O.P.D. of R.G.G.P.A.C & Hospital, Paprola, Distt.Kangra are suffering from Tinnitus.

A systemic review has found that globally Tinnitus affects around 740 million adults or around 14% of the world's population

Patients complaints of Tinnitus feel annoying and irritated all the time with disturbance of sleep.

Some of the patients has also complained of suicidal tendencies due to this severe annoying disease.

Therefore to reduce the incidence of Tinnitus, I have selected this disease for my study.

Criteria for Selection of patients

Uncomplicated patients with sign & symptoms of Tinnitus attending OPD of R.G.G.P.G. Ayurvedic college and Hospital Paprola were selected.

A. Inclusion criteria

1. Patients willing to undergo trial.

2.The patient with symptoms of Subjective type of Tinnitus or *Karna Nada* as described in *Ayurvedic* and Modern literature attending the OPD of department of Shalakya, R.G.G.P.G. Ayurvedic College &Hospital, Paprola.

B. Exclusion criteria

Patients suffering from any chronic debilitating diseases like:

• Diabetes Mellitus

• Hypertension, Hypotension

•Hyperthyroidism, Hypothyroidism

•Hyperlipidemia

Ear pathologies like:

•ASOM, Adhesive otitis media, Meniere's disease, Otitis media with effusion.

•Auto-immune disorders and whom need surgical management.

METHOD OF STUDY
A)Diagnostic phase
B)Interventional phase
C)Assessment phase

Criteria of Diagnosis
Diagnosis will be based on the history and symptoms of Tinnitus.
1. History
•Onset
• Duration
• Unilateral/bilateral
• Drug Intake (ototoxic drugs)
2. Signs and symptoms of Tinnitus.
3. Examination of ear with Otoscope.
4. Tuning fork test.
5. Pure Tone Audiometry.
INVESTIGATIONS:
CBC
ESR
FBS
LIPID PROFILE

B) INTERVENTIONAL PHASE
GROUPING & POSOLOGY
Total number of 30 patients were selected.
All the selected patients fulfilling the criteria were randomly divided into three groups (10 patients in each group).

Number of groups	Number of patients	Treatment given
Group I	10	*Karanapoorana* with *Nirgundyadi Taila*
Group II	10	*Rasnaadi Guggulu* orally
Group III	10	*Karanapoorana* with *Nirgundyadi Taila* and *Rasnaadi Guggulu* orally

1. *Nirgundyadi Taila* for *Karnapoorana*
Dose- 2 ml in each ear
Time-twice a day
Duration- 100 *Matra Uchharan Kala*

2. *Rasnaadi Guggulu* orally
Dose- 500mg TID
Anupana- lukewarm water
Duration of trial- 15 days.

Followup
• Two followup at every 7 days during treatment.
•One followup after completion of trial.

C)Assessment Phase
Criteria for assessment
The effect of treatment would be assessed by asking following questionnaire from the patients.

A.Tinnitus Severity Index Questionnaire.

Sr.no.	Does your Tinnitus	Never (0)	Rarely (1)	Sometimes (2)	Usually (3)	Always (4)
1.	Still make you feel irritable or nervous					
2.	Still make you feel tired or stressed					
3.	Still make it difficult for you to relax					
4.	Still make you uncomfortable to be in a quiet room or setting					
5.	Still make it difficult to concentrate					
6.	Still make it harder to interact pleasantly with others					
7.	Interfere with your required activities (work, home, care or other responsibilities)					
8.	Interefere with your social activities other things you do in leisure time					
9.	Does your Tinnitus still interfere with sleep					

Mild - 1-9
Moderate - 10-18
Marked - 19-27
Severe - 28-36

B.Hearing loss	Grade
0-25db	0
25-40db	1
40-60db	2
>60db	3

Criteria for assessement of results
The efficacy of the therapy was assessed on the basis of subjective criteria.

Subjective symptoms score
0 : Absence of signs or symptoms
1 : Presence of signs or symptoms in mild degree.
2 : Presence of signs or symptoms in moderate degree
3 : Presence of signs or symptoms in marked degree
4 : Presence of signs or symptoms in severe degree

The effect of the therapy was assessed as below
Cured : 100% relief in subjective symptoms.

Marked relief :More than 75% in subjective symptoms.
Moderate relief : 50-75% in subjective symptoms.
Slight relief : 25-49% in subjective symptoms.
No relief : Less than 25% in subjective symptoms.

Statistical Analysis

The information gathered regarding demographic data is shown in percentage.

The scores of criteria of assessment were analyzed statistically in form of mean score B.T. (Before treatment), A.T. (After treatment), (B.T.—A.T.) difference of mean, S.D. (-Standard Deviation), S.E.(Standard Error). Student paired 'T' test was carried out at $p>0.05$, $p< 0.05$ and $p < 0.001$.

The results were considered significant or insignificant depending upon the value of p.

- Highly significant - $p<0.001$
- Moderately significant - $0.01< p >0.001$
- Significant - $p<0.05$
- Insignificant - $p>0.05$

Consent of Patient

All the patients selected for trial were explained the nature of the study and their written consent was obtained on the proforma before including them in the clinical study.

Clinical data as below

Groups	Registered Pt.	Completed	Discontinued	Percentage
Group I	10	10	0	100
Group II	10	10	0	100
Group III	10	10	0	100
Total	30	30	0	100

The total number of patients registered in the present study were 30, out of which 30 completed the treatment. Amongst them, total 10 patients were registered in each one of the three groups.

RESULTS

Total 30 patients were registered from Shalakya Tantra OPD/IPD of Rajiv Gandhi Govt. Post Graduate Ayurvedic College & Hospital, Paprola, Distt. Kangra(H.P.). Among all, 30 patients Completed the trial. 10 patients were registered in Group I in which 10 patients completed the study, 10 patients were registered in Group II, 10 Patients were registered in group III in which 10 patients completed the study.

Demographic profile

Maximum number of the patients of *Karna Nada* were registered in the age group ranging from >60 years were 10 (33.3%) , majority of males were 17 (56.6%).

Majority of patients registered in the present study were married (73.3%) and of Hindu religion (96.7%).Maximum number of patients were from rural area 60% while 40% reside in urban area. In this study House wives were 11(36.7%) followed Graduates were 16 (53.3%).Maximum number of patients (60%) in the present study belongs to Upper middle class.In the present trial, it was found that (66.7%) patients were vegetarian .(76.7%) patients were having no addiction.

All the patients of this study were having *Dvandaja Prakriti*. Maximum number of patients i.e. 19 patients (63.3%) were having *Vata-Kaphaja Prakriti*. 16 (53.3%) were having *Vishama Agni*. *Satva* wise distribution shows that 25 patients (83.3%) were having *Madhyama satva*. 83.3% of patients were of *Madhyama Samhanana*.

90% of patients were having *Rajsika Prakriti*. 76.7% of the patients were having *Madhyama Vyayama Shakti.* (53.3%) patients were hearing sounds unilaterally and (53.3%) patients complaint of noisy sound.

Table 3: The effect of therapy in Group I on the criteria assessed has been presented here as under- Effect of *Nirgundyadi Taila* on Symptoms and Signs of *Karna Nada* in Group – I.

Sr.no.	Criteria	n	Mean score		Difference	% age relief	±SD	±SE	t	p
			BT	AT						
1.	TSIQ	10	13.700	7.100	6.600	48.17%	1.776	0.562	11.749	<0.001
2.	HL	2	2.50	2.00	0.500	20 %	0.707	0.500	1.000	>0.05

Table 4: The effect of therapy in Group II on the criteria assessed has been presented here as under- Effect of *Raasnadi Guggulu* on symptoms and signs of *Karna Nada* in trial group II.

Sr.no.	Criteria	n	Mean score		Difference	% age relief	±SD	±SE	t	p
			BT	AT						
1.	TSIQ	10	19.600	17.000	2.600	13.26%	1.506	0.476	5.461	<0.05
2.	HL	4	1.750	1.500	0.250	14.28%	0.500	0.250	1.000	>0.05

Table 5: The effect of therapy in Group I on the criteria assessed has been presented here as under- Effect of *Nirgundyadi Taila* and *Rasnaadi Guggulu* on symptoms and signs of *Karna Nada* in trial group III.

Sr.no.	Criteria	n	Mean score		Difference	% age relief	±SD	±SE	t	p
			BT	AT						
1.	TSIQ	10	15.900	7.100	8.800	55.34%	2.098	0.663	13.266	<0.001
2.	HL	5	2.400	1.400	1.000	41.6 %	0.707	0.316	3.162	>0.05

Intergroup comparison (Group I vs Group II vs Group III) comparision over TSIQ and Hearing loss

N			Symptom	%age Relief			F		P		Remarks
Group I	Group II	Group III		Group I	Group II	Group III					
10	10	10	TSIQ	48.17 %	13.26%	55.34%	BT	6.447	0.008	>0.005	NS
							AT	26.901	<0.001	<0.001	HS
2	4	5	Hearing loss	20 %	14.28%	25%	BT	1.066	0.389	>0.005	NS
							AT	0.263	0.775	>0.005	NS

OVERALL EFFECT OF THERAPY ON TSIQ

Sr. No.	Assessment	Group I		Group II		Group III	
		No. of patients	%age	No. of patients	%age	No. of patients	%age
1.	Cured	0	0	0	0	0	0
2.	Markedly improved	0	0	0	0	0	0
3.	Moderately improved	7	70%	0	0	8	80%
4.	Mild improved	3	30%	3	30%	2	20%
5.	Unimproved	0	0	7	70%	0	0%

DISCUSSION

In *Sushruta Uttara Tantra* the common *Nidana* for the diseases of *Karna* is responsible for the disease *Karna Nada* as well. Some specific *Nidana* like *Shrma, Kshaya* and *Ruksha Bhojana*, etc. are also mentioned for *Karna Kshweda*. All these factors reduce the blood supply in straie vascularis of the inner ear which leads to destruction of inner hair cells that causes Tinnitus. *Acharyas* have considered *Vata* as the main *Dosha* responsible for *Karna Nada*. While it can be said that *Karna Kshweda* is the next stage of *Karnanada, Vatapradhana Tridosha* along with *Rakta* as responsible for *Karna Kshweda*. In *Karna Nada* different types of sounds viz. *Bheri, Mridanga, Shankha, Bhringa, Krauncha, Manduka, Tantri, Saamturyasvanam, Geetadhyayana*, etc. are heard while in *Karna Kshweda, Venugoshvata* (flute like) sound is heard in the ears. Thus, *Karnapoorana* and *Ghritapaana* studied in this work because if used daily could probably prevent or reduce perception of sound i.e., Tinnitus/*Karna Nada*. The treatment principle explained by our *Acharyas* is common for *Karna Nada, Badhirya, Vataja Karnashoola* and *Karna Kshweda*. This is probably because all the four are predominantly *Vataja Rogas* with association of other *Doshas* and in all these conditions the main factor is reduced blood supply to the inner ear which is treated more effectively by *Ayurveda*. In *Ashtanga Hridaya, Acharya Vagbhata*, specifically mentions that if *Karna Nada* is not treated with time it may lead to *Karna Badhirya*.

Demographic Profile

In the present trial, 30 patients were registered. The highest prevalence of *Karna Nada* was observed in patients within the age group of more than 60 years, accounting for 33.33% of the cases. Most studies indicate that the incidence of Tinnitus tends to rise with advancing age, particularly up to around 65 years. Ageing causes reduced neurotransmitter efficiency (especially GABA and acetylcholine) in auditory pathways, increasing tinnitus perception. In this trial, the prevalence of males are 56.6% and female patients exhibited 43.4% prevalence of *Karna Nada*. Occupational & Environmental Noise: Men more often work in industries, military, or settings with chronic noise exposure. Maximum number of patients included in this study were House wives (36.7%) followed by patients who were serviceman (20%). The incidence of prevalence of serviceman may be explained on more demanding nature of their employement, along with the fact that they frequently work long hours in noisy environment. Majority of patients registered in the present study were married (73.3%) and (26.7%) were unmarried. There is no correlation with marital status.

Maximum number of patients included in the study belongs to Hindu religion (96.7%). Predominance of Hindu population in the study is attributed to the geographical predominance of Hindus in the selected population. Both of these factors don't have any significant relation to the disease.In the present trial, maximum number of patients were from rural area 60%. Predominance of rural patients is attributed to the area

where the study is conducted. In the present study, maximum number of patients were Graduates (53.3%). Prolonged Earphone/Headphone Use,Online classes, music, and phone use causes chronic noise exposure damages cochlear hair cells. Chronic Stress & Academic Pressure, Competitive studies and career anxiety elevate cortisol, which amplifies abnormal auditory nerve firing.Maximum number of patients (60%) in the present study belongs to upper middle class followed by lower middle (36.7%) and poor individuals (33.3%). Affordable access to high‑quality gadgets → more prolonged and louder headphone use that leads to noise‑induced cochlear damage and auditory nerve.In the present trial, it was found that (66.7%) patients were vegetarian. Pure vegetarians often lack natural dietary sources of B12 (present mainly in animal products: meat, eggs, dairy).On analyzing prevalence of various addictions among 30 patients, it was found that (76.7%) patients were having no addiction and (23.3%) patients were addicted to smoking and alcohol, Tobacco contains caffeine which is regarded as a one of the triggering factor of Tinnitus.

All the patients of this study were having *Dvandaja Prakriti*. 63.3% were having *Vata-Kaphaja Prakriti*. Thus, it can be concluded that *Vata* dominant patients suffer more from *Karna Nada*. 53.3% were having *Vishama Agni*. Suggesting impaired digestion which is due to predominance of *Vata Dosha* which further result in *Dhatukshaya* due to improper nutrition. 83.3% were of *Madhyama Satva*. The *Satva* of patients leads him to approach the physician when the symptoms become severe. 83.3% were having *Madhyama Samhanana*,(90%) were of *Rajsika Manasa Prakriti* and (10%) were having *Tamsika Manasa Prakriti*.

76.7% of the patients were having *Madhyama Vyayama Shakti*. On observing diurnal variation of Tinnitus (66.7%) patients were suffering from it all day and only (33.3%) were feeling it at night. In Morning time- Some people notice Tinnitus is quieter upon waking, possibly due to reduced auditory stimulation overnight and relaxation during sleep.Others find it worse in the morning, often linked with poor sleep. (36.7%) patients complaint of hearing loss associated with Tinnitus. Most Tinnitus is linked to sensorineural hearing loss, with the severity and pitch often corresponding to the frequencies of greatest hearing deficit. In the present study (53.3%) patients were hearing sounds unilaterally while only (46.7%) were hearing sounds in a single ear.*Ekanta Vata Prakopa*-Localized aggravation of *Vata Doṣha* in *Karṇa Srotas* of one ear due to: Excessive use of one ear (*Srotrendriya Atiprayoga*).On enquiring 30 patients in the present study (53.3%) patients complaint of noisy sounds, (20%) complaint of multitonus sounds and (26.7%) complaint that sounds were single tonus in nature.

1.Effect of therapy in Group-I

a) TSIQ - (patients treated with *Nirgundyadi Taila)*

The mean score of TSIQ, before treatment was 13.7 and after treatment it came down to 7.1 giving 48.17% relief which was highly significant statistically ($p<0.001$).

b) Hearing loss-(Patients treated with *Nirgundyadi Taila*)

The mean score of Hearing loss, before treatment was 2.5 which it came down to 2 after treatment, giving 20% relief which was statistically insignificant ($p> 0.05$).

This may be due to *Balya, Rasayana, Nadivardhaka, Snehana, Vata shamaka*, neuroprotective, anti-oxidant, anti-anxiolytic effect of the trial drug.

2. Effect of therapy on group II

a) TSIQ-(Patients treated with *Rasnaadi Guggulu*)

The mean score of TSIQ, before treatment was 19.6 and after treatment it came down to 17 giving 13.26% relief which was moderately significant statistically ($p<0.001$).

b) Hearing loss- (Patients treated with *Rasnaadi Guggulu*)

The mean score of Hearing loss, before treatment was 1.75 which it came down to 1.5 after treatment, giving 14% relief which was statistically insignificant ($p>0.05$).

This may be due to *Vata Shamaka, Balya, Brihaman*, rejuvenating, micro-circulation enhancement effect of the trial drug.

3. Effect of therapy on Group III

a) TSIQ - (patients treated with *Nirgundyadi Taila* and *Rasnaadi Guggulu*)

The mean score of TSIQ, before treatment was 15.9 and after treatment it came down to 7.1 giving 55.34% relief which was highly significant statistically ($p<0.001$).

b) Hearing loss- (patients treated with *Nirgundyadi Taila* and *Rasnaadi Guggulu*) The mean score of Hearing loss, before treatment was 2.4which it came down to 1.4 after treatment, giving 41.6% relief which was statistically insignificant ($p>0.05$).

This result may be due to when both drugs were used in combined form which enhances the potency of the drugs due to their respective pharmacological properties.

INTER GROUP COMPARISON

- **Group I vs Group II vs Group III :** 48.17% relief was observed in TSIQ in the patients of group-1, and in patients of group -II 13.26% relief was observed, while in patients of group-III 55.34% relief was observed. The intergroup difference was highly significant statistically ($p<0.001$).

The effect of therapy on TSIQ in Group I and III patients is more pronounced as compared to patients of Group-II.

2. Effect of Therapy on Hearing loss

In Group-I (patients treated with *Nirgundyadi Taila),* the mean score of Hearing loss, before treatment was 2.5

which it came down to 2 after treatment, giving 20% relief which was statistically insignificant (p> 0.05).
In Group-II (patients treated with *Rasnaadi Guggulu)*, the mean score of Hearing loss, before treatment was 1.75 which it came down to 1.5 after treatment, giving 14% relief which was statistically insignificant (p> 0.05).
In Group-III (patients treated with *Nirgundyadi Taila* and *Rasnaadi Guggulu*), the mean score of Hearing loss, before treatment was 2.4which it came down to 1.4 after treatment, giving 41.6% relief which was statistically insignificant (p> 0.05).

INTER GROUP COMPARISON
Relief in hearing loss was 20% in group -I and 14.28% in group-II while in group III it was 25%, the intergroup difference was insignificant statistically (p>0.05).

OVERALL EFFECT OF THE THERAPY
In group I- 7 (70%) patients were moderately improved, 3 (30%) were mild improved. No patient remained unimproved. No patient was reported with complete cure of the disease.
In group II- 3 (30%) patients showed mild relief, 7 (70%) patients remained unimproved.No patient was reported with complete cure of the disease.
In group III- 8(80%) patients were moderately improved,2(20%) were mild improved. No patient was reported with complete cure of the disease.
Above mentioned results shows that when *Nirgundyadi Taila Karanpoorana* along whith *Rasnaadi Guggulu* orally were used showed better results on improvement grounds rather than both used separately.

PROBABLE MODE OF ACTION OF DRUG
Nirgundyadi Taila
Nirgundyadi Taila is a classical medicated oil described in *Yogratnakara* for various *Karna Roga*, particularly those of *Vataja* origin, such as *Karna Nada*.The formulation composed of drugs possessing *Vata-hara, Shothahara, Vednasthapana* and *Nadivardhaka,* (nervine) properties, making it suitable for the management of Tinnitus.

Most of the ingredients of *Nirgundyadi Taila* have *Madhura (18%), Katu(33.33%)* and *Tikta Rasa (29.63%) Laghu Guna* (23.7%) followed by *Guru Guna* (10.6%), *Snigdha Guna* (10.6%), *Ushna Virya* (92.3%), *Katu Vipaka* (61.54%), followed by *Madhura Vipaka* (38.46%) and *Vata Shamaka (45.8%) followed by Kapha Shamaka* (41.7%) properties.

1.As per *Rasa* - *Madhura Rasa* having *Shadindriya Prasadana, Balya, Marutaghna, Sthairyakara* properties and *Katu Rasa* having *Sphutikarotiindriyani, Margan Vivranoti* and *Shleshma Shamaka* properties.On the behalf of these properties, they work on *Karnendriya* and cleaning the channels and provide the strength to the *Nadi Sansathana* and thereby curing the abnormality in the *Karnendriya*.

2. As per *Guna*- *Snigdha Guna* having *Balya* and *Vatahara* properties. *Guru Guna* having *Tarpana, Brinhana, Balya* and *Vatahara* properties which help in the nourishment and strengthening of neurovasulatures and improve the disease by *Vatahara* properties.

3. As per *Virya*- Due to *Ushna Virya, Kapha Dosha* and *Gati* of *Vata* gets normalized which improve the disease. Another benefit of *Ushna Virya* is that it enhances local as well as general metabolism .Because of this , it correct *Dhatuposhana Karma* and ultimately leads to production of *Dhatu* and provide nourishment to *Indriyas*.

4. As per *Vipaka*- *Katu Vipaka* aids in *Doshapachana* and strengthens *Agni* at the cellular level. *Madhura Vipaka* has *Brimhana* effect that nourishes body and mind and also have neuroprotective effects reduces oxidative stress and modulate neurotransmitter imbalance that play role in Central auditory processing disorders.

5. As per *Doshakarma-* *Vata Shamaka Karma works by addressing the root cause – the vitiation of Vata in auditory pathways through Snehana,Shodhana,Rasayana* based rejuvenation .They reduce the false auditory perception improving nerve conductivity and cognitive balance.

Probable pharmacological mode of action of *Nirgundyadi Taila*
1. Neuroprotective Effect
Flavonoids (e.g., casticin, luteolin) and alkaloids like Nishindine, Calotropin, act as antioxidants, preventing free-radical damage to auditory hair cells and neural synapses in the cochlea, which are often implicated in tinnitus pathology.

2. Microcirculatory Enhancement
Essential oils Morginine, spirochin and terpenoids in the formulation stimulate vasodilation and improve microcirculation around the cochlear and vestibular apparatus, thus ensuring better nourishment to auditory nerves.

3. Sedative and Anxiolytic Effect
Certain alkaloids Aconitine, psuedoaconitine and flavonoids exert a mild sedative action on the central nervous system, reducing the stress component of Tinnitus perception.This is significant since psychological factors like anxiety often exacerbate Tinnitus symptoms.

CONCLUSION
- Due to similarities in clinical features and management, the disease *Karnanada* can be correlated with the Tinnitus.
- The incidence of hearing loss increases with age day by day.

- Analysis of the study reveals that *Karananada* is a disease which mostly affects the people who are having *Vishamagni*.
- Incidence increases with age both conditions are *Vata* dominant conditions.
- Impaired digestion which is due to predominance of *Vata Dosha* which further result in *Dhatukshaya* due to improper nutrition.
- This disease is more common in upper middle class and literate people who are more attentive towards their mental and physical health, because Tinnitus effects the mental status of a person.

Regarding aeticological factors it is confirmed that poor nutrition, Patients of *Vata-Kaphaja* and *Vata-Pittaja Prakriti* are more common to this disease.

Drugs used in all the groups are equally effective (statistically significant), but on the improvement grounds it can be concluded that Group III (*Nirgundyadi Taila Karnapoorana* with *Rasnaadi Guggulu*) showed better results than GroupI, further group I showed better results than group II.

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