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CLINICAL EVALUATION OF EFFECT OF KAPIKACCHU GHANAVATI ON KARNANAD (TINNITUS) ASSOSIETED WITH SENILE DEAFNESS.

ENT

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ABSTRACT

Karnanada (Tinnitus) associated with senile deafness occurs usually after 45 years age. It is unilateral or bilateral progressive or non progressive. The prevalence of tinnitus in adults with hearing problems is very high (59 to 86%), and it is estimated that tinnitus is present in 70% with Presbycusis (senile deafness). But there is no assured treatment for tinnitus associated with senile deafness only hearing aid and masking can be useful. According to Ayurveda Badhirya and tinnitus is mainly related with Vata dosha which is predominant in old age .So, Kapikachhu (Mucuna pruriens bek) seeds are Ayurvedic medicine, Acharya Bhavprakash has mentioned that Kapikachhu have Vatghna, Balya and Vajikar properties. In the disease development process of Badhirya and Karnanada mainly vitiated vata dosha alone or along with Kapha goes in Shabdavaha sira / strotas beacuse of that margavrodh occurs and leads to Badhirya and tinnitus. So with help of Vataghnata the balya property of Kapikachhu it is useful in treatment of Badhirya and tinnitus. This study is the view of ancient and modern science concerning with conceptual understanding of its etiology, diagnosis of Karnanada (tinnitus) associated with senile deafness and its Ayurvedic treatment. The present study has shown that the kapikachhu Ghana vati is highly significant in the management of the karnanada associated with senile deafness.

KEYWORDS

Ayurveda, Karna, Karnanada, Badhirya, deafness, Vatghna, Kapikachhu.

INTRODUCTION:-

Karannaad become commonest disease, affecting all age groups but it is commonly found in senile age group. As per Vachaspatyam the word Karnam means the sound which can be perceived by an organ, are called as Karna. The word Nadam means Shabdam (Sound)

कर्ण स्रोतः स्थिते वाते सृनोति विविधान स्वरान ।
भेरी मृदंग शंखानां कर्णनादः सोच्यते ।**I**

मधु मा. नि 57 पृ 65

The Term Karannaad is basically derived from two root words ***Karna Nada. Karna*:** – The organ of hearing.***Nada*:** – Sound or ringing in the ear.

According to Acharya Charaka, and Madhavkar, Karannaad is a Vataja Nanaatmaja Vyadhi and Karna is one of the Adhisthana of Vata-Dosha. Acharya says vitiated Vata Dosha either entering into other channels (Vimarga Gamana) encircled by Kaphadi Doshas in Shabda Vaha Srotas produces different types of sounds in the ear like Bheri, Mrudanga, Shankha etc, is known as Karna Nada. This disease can be correlated to tinnitus on the basis of sign and symptoms.

Tinnitus is commonly described as a perception of sound that is not related to an external acoustic source or electrical stimulation. It is an extremely common condition, but only a fraction of those who experience tinnitus are significantly disturbed.

विरिक्त शीर्षस्य च शीतसेविनः करोति हि क्षवेडमतीव कर्णयोः ।। **सु. उ. 209**

Specific etiological factors for Karan naad are not mentioned in classics. The described common etiological factors for all Karna roga. These are:- Pratishyaya and Avasyayam- Common cold and exposure to snow. Jalakreeda: Swimming and playing in rain.Karna Kanduyana: - Keeping matchsticks, pins, or other sharp edged objects in the ear may lead to kshatam in the karna leading to Karna shoola, Vruna, Vidradhi, Pootikarna etc. Shastramithyayoga: - Avishodhita yantra and Shastra which are inserted in the Karna for Diagnostic and Surgical procedures (for removal of Forign bodies etc.) in the Karna leading to Karnashoola. (Ear pain), Karna badhirya, Pootikarna, Karananada etc. Shabdhammithyayoga- Hearing loud sound and high pitched sounds excessively, using mobiles constantly etc.

वायु**:** पित्तादिभि**:** युक्तो वेणु घोशोपमम स्वनम ।
करोति कर्णयो**:** क्षवेडम कर्ण क्षवेदः स उच्यते ।।

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Due to above etiological factors vitiated Vata associated with Pitta or Kapha reached the Urdhvanga and Settled in Karnendriya causes Karan naada. Karannaad can be related as tinnitus to some extent. Now a day's tinnitus is a common problem due to sound pollution, uses of ear phones (prolonged hearing of songs), excessive talking on mobile phones (working at cell centers), modern pub cultures and trauma to head.

Karanada which happens when Vata gets localized in the siras or channels which convey sounds. The sounds may vary and may be constant or intermittent. If left untreated, it may gradually give rise to hearing difficulties even for loud sounds and ultimately leads to deafness. The general etiology of Karana roga are Vata provoking factors grouped as those creating atiyoga or mithyayoga of the sound like exposure to loud noise etc, injury to auditory pathway by endogenous or exogenous factors and those obstructing auditory pathway like recurrent otorrhino laryngological infections, impacted wax etc. Dhatukshaya or cell degeneration in the level of end organs of hearing is the main pathological process involved.

No effective drug treatments are available although it is being managed with Pharmacotherapy, electrical suppression, cognitive and behavioral therapy, sound therapy, habituation therapy, massage, stretching and hearing aids etc. The management of this condition in modern is so costly and time taking.

But in Ayurveda The treatment and management of Karan naada is cost effective and easily performed. This condition is aimed to attain Vatahara Acharya Bhavprakash has mentioned that Kapikachhu have Vatghna, Balya and Vajikar properties. In the disease development process of Badhirya and Karnanada mainly vitiated vata dosha alone or along with Kapha goes in Shabdavaha sira / strotas beacuse of that margavrodh occurs and leads to Badhirya and tinnitus. So with help of Vataghnata the balya property of Kapikachhu it is useful in treatment of Badhirya and Karnanada (tinnitus).

According to modern science:-

Tinnitus from the Latin word Tinnitus meaning “ringing” is the perception of Sound within the human ear, when no actual sound is present. It is defined as a phantom auditory perception without corresponding acoustic or mechanical correlates in the Choclea.

Tinnitus can be perceived in one or both ears or in the head. It is the description of a noise inside a person's head in the absence of auditory stimulation. Tinnitus is not a disease but a Symptom that can result from a number of underlying causes. The diagnosis of tinnitus is usually based on the person's description. The sound may be soft or loud, low Pitched or high pitched and appear to be coming from one Ear or both it is usually found in senile deafness.

One of the possible mechanism relies or otoacoustic emissions. The inner ear contains thousands of minute inner ear cells with steriocilia

which vibrate in response to sound waves and outer hair cells which convert neural signals into tension on the vibrating basement membrane. The sensing cells are connected with the vibrating cells through a neural feedback loop, whose gain is regulated by the brain. This loop is normally adjusted just below on set of self oscillation, which gives the ear spectacular sensitivity and selectivity. If something changes, it is easy for the delicate adjustment to cross the barrier of oscillation, and tinnitus results. Exposure to excessive sound kills hair cells, and studies have shown as hair cells are lost, different neurons are activated, activating auditory parts of the brain and giving the perception of sounds. Another possible mechanism in tinnitus is damage to the receptor cells.

70%- 80% of individuals with tinnitus have significant hearing difficulties. Tinnitus severely impairs quality of life of about 1-2% of all people. Tinnitus is regarded as a sub cortical perception resulting from the processing of weak neural activity in the periphery. In age related hearing loss there is degeneration of neurons so there is weak neural activities leads to tinnitus.

NEED FOR STUDY:-

The prevalence of tinnitus in adults with hearing problems is very high (59 to 86%), and it is estimated that tinnitus is present in 50% of patients with sudden hearing loss, 70% with Presbycusis (senile deafness).

The prevalence of tinnitus related to senile deafness increases significantly with aging, but people of all ages experience tinnitus. Tinnitus is also experienced by those with normal hearing; 18% of tinnitus patients were reported to have normal hearing.

The management of tinnitus comprises of nutritional support and anti-oxidants; reassurance; Sedatives; Antidepressants; Vasodilators; Masking; Psychology; Electrical Suppression etc., either singly or in combination for early/milder form of disease and surgical measures for advanced cases. Unfortunately, all these medical and surgical interventions have very limited success, as they are not free of adverse effects and recurrence is also there It is very enormous disease and difficult to treat. Now a day, in the era of noise pollution and faulty lifestyle, number of the patients suffering from tinnitus is increasing. There is no permanent cure in modern science for tinnitus

In modern science there is no effective treatment for this disease and incidences of tinnitus are increasing day by day. Hence this study is planned to explore an easily available and cost effective treatment without any adverse effects.

Patient of Karan naad are increasing. Karan naad is one of the major causes of Sound pollution, which hampers the function of Hearing. We can correlate Karan naad with 'Tinnitus in modern science'

Aim and Objectives

Aim:

1. To Evaluate the effect of Kapikachhu Ghana Vati on Karnanada (tinnitus) associated with senile deafness.

Objectives:

1. To study in detail about Kapikachhu Ghana Vati.
2. To study in detail about tinnitus associated senile deafness.
3. Understanding the effect of Kapikachhu Ghana Vati in tinnitus associated senile deafness.
4. To establish the role of Ayurvedic line of treatment according to etiopathology of Karan nada**.**

Materials and Method:-

1) Materials:

A. Patient:

Selected as per the eligibility criteria.

B. Drugs / Medications:

KAPIKACHHU GHAN VATI

Raw drugs required for preparation was collected and authentication done from "Agharkar Research Institute" Pune.

Kpikachhu Ghan Vati was prepared as per standard Ghana vati preparation method and the same was used for the clinical study.

Methodology:

a. **Type of study:** Randomized Controlled Clinical Trial.

b. **Place of study:** Bharati Vidyapeeth Medical Foundation's Ayurved Hospital and Research centre, Pune - 411043.OPD & IPD of *Shalakyatantra* department.

c. **Ethics Committee approval:**

d. Approval of ethical committee was taken on 13/08/2015 Ref.: BVDUCOA/EC/1168/2015 - 16

d. Study methodology:

- Randomization technique –randomization done by container method selection of patients after inclusion criteria.
- Grouping-

'A' group - Control group-No treatment

'B' group - Trial group – *Kapikachhu Ghana Vati* - .

- 100 patients were studied in each group.

STUDY DESINE

First screening done as per inclusion criteria – counseling and informed consent - Randomization and Grouping – all these process comes under screening after that collection of data – in this study I made to groups – group A no treatment given to this group – Group B which is trail group where the Kapikachhu Gana vati given to this group – initial assessment done on 0 day with Audiometry – follow ups on 15th , 30th , 45th , and 60th days – Audiometry done on 0 , 30th , and 60th days only- total duration was 60 days –all thi processes comes under collection of data - after that data analysis and reporting done.

Inclusion criteria:

- Individuals of 45 years and above age were included.
- Individuals having complaints of tinnitus associated with senile Deafness
- Individuals of both the gender were included.

Exclusion Criteria:

- Individuals having conductive deafness.
- Individuals of SN loss due to traumatic injury.
- Mentally retarded patients.
- Individuals of SN loss secondary to other diseases like Carcinoma, Tuberculosis etc.
- Congenital deformity.

iii) **Dropout patients:**

- Patients who were irregular in follow- ups, who failed to follow the instructions or those who exited the study for personal reasons were considered as dropouts.

1. Drug Administration :-

Trial drug Kapikachhu Ghana Vati, was given to the patient with Godugdha (cow milk), two times a day (morning and evening)

In the Control group, No treatment was given, only Audiometry done for study and questioner asked and observations done.

2. Duration of Study :

A selected patient was observed for 60 days in both the groups, screened on day 0 for inclusion in study fulfilling inclusion criteria was randomized into either group and test Audiometry was performed on 0, 30th, 60th and follow up on 15th, 30th, 45th,60th day to assess the progress. From day 1 drug was started.

3. Parameters of Assessment

- **Objective Parameter-**

Objective Criteria

Audiometry – was done on Pure Tone Audiometer

0- Normal- up to 25db
1- Mild- 25db to 40db
2- Moderate-40db to 60db
3- Severe- above 60db

Subjective Criteria

The effect of treatment would be assessed by asking following Questionnaire from the patients:-

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 sitting					
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. Interfere with your social activities/ other things you do in leisure time					
9. Does your tinnitus still interfere with sleep?					

GRADATION CHART

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

Cured -	100% relief in subjective symptoms
Marked relief -	More than 75% in subjective symptoms.
Moderate relief -	51-75% in subjective symptoms.
Slight relief -	26-50% in subjective symptoms.
No relief -	Less than 25% in subjective symptoms

Normal - No perceptible difficulty.

Mild 26–40 dB - Difficulty hearing soft speech and conversations, but can understand in quiet environment.

Moderate - 41–60 dB- Difficulty understanding speech, especially in the presence of background noise. Higher volume levels are needed for hearing TV or radio.

Severe -Above 60 dB -Normal speech is inaudible, only amplified speech may be audible.

Tinnitus (Karnanada)	0-No symptoms
	1-Audible in silent environment only
	2-Audible in ordinary acoustic environment but masked by loud environmental sounds, can disturb falling asleep but not a sleep in general.
	3-Audible in all acoustic environment, disturbs falling asleep, can disturb a sleep in general and it is a dominating problem that affects the quality of life.

WHO grades of hearing impairment

Grade of Impairment	Audiometric ISO value (average of 500, 1000, 2000, 4000 Hz)	Impairment description
0 (no impairment)	25 dBHL or less (better ear)	No or very slight hearing problems. Able to hear whispers
1 (Slight impairment)	26-40 dBHL (better ear)	Able to hear and repeat words spoken in normal voice at 1 metre
2 (Moderate impairment)	41-60 dBHL (better ear)	Able to hear and repeat words using raised voice at 1 metre
3 (severe impairment)	61-80 dBHL (better ear)	Able to hear some words when shouted into better ear
4 (Profound impairment including deafness)	81 dBHL or greater (better ear)	Unable to hear and understand even a shouted voice

Primary endpoint-

Use of Kapikachhu Ghana Vati is beneficial in tinnitus associated with age related sensory neural deafness.

The progress of tinnitus can be effectively controlled with Kapikachhu Ghana Vati.

Secondary outcome –

Kapikacchu Ghana Vati is beneficial tinnitus associated with senile deafness.

4. Sample Size–

It was calculated considering 6.6% Prevalence rate of disease at BVMF's *Ayurved* hospital Department of *Shalakyatantra.*

Total number of patients studied was 100 in each group, who completed treatment excluding the dropouts.

6. Method of data analysis:

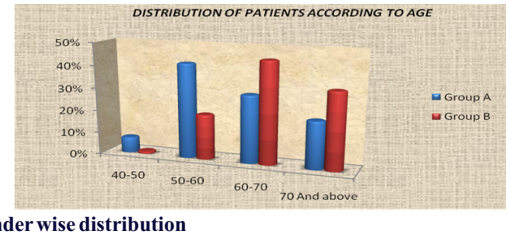
The data collected from the study was compiled, tabulated and analyzed using Wilcoxon Signed Rank test for the efficacy of Trial Drug and Control Drug and Mann Whitney U test for comparison; this was in accordance with the aim and objectives of the study.

Observations, Results and Analysis :-

After completing the clinical study, observations, results and analysis were noted. The data was divided into three group's i.e. demographical, subjective and objective data.

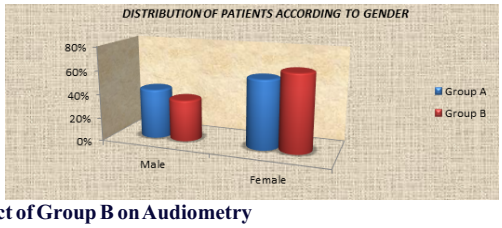
a) Age: Total patients – 100 in each group

Age	Group A		Group B	
	No.Of Patients	Percentage	No.Of Patients	Percentage
50-60	42	42%	20	20%
60-70	34	34%	45	45%
70 And above	24	24%	35	35%
Grand Total	**100**	**100%**	**100**	**100%**



Gender wise distribution

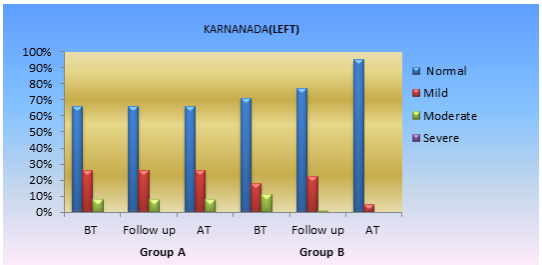
Gender	Group A		Group B	
	No. Of Patients	Percentage	No. Of Patients	Percentage
Male	42	42%	35	35%
Female	58	58%	65	65%
Grand Total	**100**	**100%**	**100**	**100%**

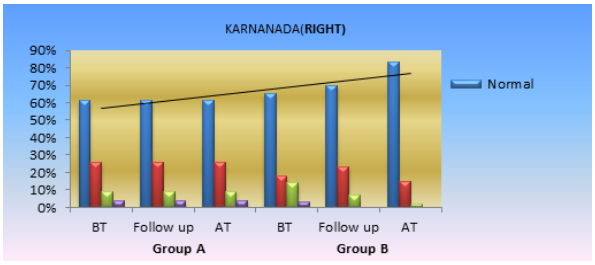


Effect of Group B on Audiometry

Audiometry		Mean Rank	Chi sq	Df	P value
Right	Pre	2.32	128	2	1.60E-28
	2nd Follow up	2.32			
	Post	1.36			
Left	Pre	2.345	116.3474	2	5.44E-26
	2nd Follow up	2.26			
	Post	1.395			

Effect of Group A and Group B on Karnanada (Tinnitus)





Overall improvement after treatment of Kpikachhu Ghana Vati

Parameters	Improvement
Audiometry(Right)	30.88%
Audiometry(Left)	31.43%
Karnanada (Left)	65.45%
Karnanada (Left)	87.50%

IMPOVEMENT OF TINNITUS ASSOCIATED WITH SENILE DEAFNESS AS PER GEDATION

GRADE	BT	AT
Normal hearing problem and tinnitus	34.10%	58.70%
Mild hearing problem and tinnitus	17.20%	22.30%
Moderate hearing problem and tinnitus	28.60%	15.20%
Severe hearing problem and tinnitus	20.10%	3.80%

DISCUSSION:

Kapikachhu Ghana Vati was authenticated and standardized prior to trials. Clinical trials were conducted and selected patients were randomly allotted to Trial and Control groups. Regular follow-ups at an interval of 15 days that was 15th, 30th, 45th, 60th day, were conducted for a maximum of 60 days examination done on 0 day.

Total 225 patients were assessed. From which 11 patients were excluded. Then 214 patients were allocated randomly in both groups. 8 patients in Group A and 6 patients in Group B were lost follow-ups. Finally 100 patients in each group were analyzed. Total 14 patients were dropouts. The reason for dropout was, due to irregular follow-up.

On the basis of **'AGE'**, In Present study all patients are above 50 years of age. In group A maximum no of patient's i.e.42%. in age group 50-60years. Similarly, in Group B it was found that maximum i.e.45% in age group 60-70years. Means from age 50-70 years of age, tinnitus associated with age related hearing loss is most commonly found, which indicates that degeneration of cochlear nerve occurs in this age. Above 70 years of age, difficulty in hearing increases with tinnitus but number of participants were less, because numbers of patients of this age group were unable to come to hospital or negligence towards age related deafness and tinnitus is more in this age group.

As per the **'GENDER',** the maximum numbers of cases were seen in females (58% and 65% respectively in A and B Group). Although no such rule exists, this is just an observation that the probable causes could be attributed to their occupations and habits thus making them more prone to the condition. On the other hand, ignorance towards health by the females in our society could be an influencing factor.

Effect of Group A and Group B on Audiometry Results of this analysis indicated that there, were highly significant improvements observed in Group B on Audiometry in sensori-neural deafness after treatment of Kapikachhu Ghana Vati. However there were no significant differences observed, before and after follow up in Group A because no treatment was given to this group.

Effect of Group A and Group B on karnanada (tinnitus) Results of this analysis indicated that there, were highly significant improvement observed in Group B on karnanada in sensori-neural deafness, after treatment of Kapikachhu Ghana Vati . However there were no significant differences observed before and after follow up in Group A because no treatment was given to this group.

Before treatment of Kapikachhu Ghana Vati normal tinnitus associated with senile deafness patients were more than 34% and after trial it improved up to 58%, Similarly mild tinnitus associated with senile deafness patients improved from 17.20% to 22.30%., Moderate and severe tinnitus associated with senile deafness patients were decreased from 28.60% to 15.20% and 20.10% to 3.80% respectively. It indicates that there were significant improvements observed after the treatment of Kapikachhu Ghana Vati.

DISCUSSION ON LITERATURE REVIEW

- Sushrutacharya and vagbhatachary mentioned badhirya, in which Vata dosha vitiated along with Kapha goes in Shabdavaha sira / Strotas because of that Margavrodh occurs that leads to Badhirya and Karnanada.
- According to Acharya Charaka, Karannaad is a Vataja Nanaatmaja Vyadhi and Karna is one of the Adhisthana of Vata- Dosha. Acharya says vitiated Vata Dosha either entering into other channels (Vimarga Gamana) encircled by Kaphadi Doshas in Shabda Vaha Srotas produces different types of sounds in the ear like Bheri, Mrudanga, Shankha etc, is known as Karna Nada.
- According to Bhavaprakash Nighantu Kapikachhu have **Vatashamak, Vajikar and Balya properties .**So, by considering these properties, Kapikacchu worked in the management of Karnanada (tinnitus) associated with Badhirya.(senile deafness).
- In this study badhirya and karnanada are because of vitiated vata dosha and Kapha dosha. Which were reduced due to vatashamak and ushna virya properties of Kapikacchh. The drug Kapikachhu is vajikar, madhur rasatmak and balya because of that it is saptadhatu poshak, so it gives nourishment to majjadhatu (neuro protective and neuro regenerating) and balya property gives bala(strength) to majja dhatu wihich reduses degenaration of neurons.

The concept of Badhirya according to the modern science, there is degeneration of neurons of cochlear Nerve, loss of hair cells and loss of cochlear ganglionic cells.

According to modern science tinnitus is One of the possible mechanism relies or otoacoustic emissions. The inner ear contains thousands of minute inner ear cells with sterio cilia which vibrate in response to sound waves and outer hair cells which convert neural signals into tension on the vibrating basement membrane. The sensing cells are connected with the vibrating cells through a neural feedback loop, whose gain is regulated by the brain. This loop is normally adjusted just below on set of self oscillation, which gives the ear spectacular sensitivity and selectivity. If something changes, it is easy for the delicate adjustment to cross the barrier of oscillation, and tinnitus results.

Exposure to excessive sound kills hair cells, and studies have shown as hair cells are lost, different neurons are activated, activating auditory parts of the brain and giving the perception of sounds. Another possible mechanism in tinnitus is damage to the receptor cells.

- It is tested & proved that the drug Kapikachhu contains many phyto chemicals. e.g. Alinine, Glycine, Cystine, histidine , Dopa,, these ingredients are very useful in regeneration of neurons and neuro protection, hence it works in age related S.N. deafness. The concept of Karnanada (tinnitus associated with senile deafness) according to the modern science, there is degeneration of neurons of cochlear Nerve, loss of hair cells and loss of cochlear ganglionic cells.
- Properties of Godugdha also increase effect of kapikachhu which use as Anupana.
- It is tested & proved that the drug Kapikachhu contains many phyto chemicals. Among them Following are useful in treatment of hearing loss and their functions are as follows-
- Dopamine helps in prevention of hearing loss in old age.
- N-Acetyl L-cysteine is capable of preventing age related hearing loss
- N- N-Acetyl L-cysteine can stop damage to the inner ear, which helps to reduce age related hearing loss.
- Linoleic acid helps to improve brain steam function in old age in rats.
- When the arachidonic acid decreases in old age , it leads to neurodegenerative disorders .
- L- arginine successfully works in angina, strokes and is also studied on 12 patients with profound hearing loss.
- Calcium can prevent and even reverse age related hearing loss and tinnitus.
- Decreased calcium level leads to memory loss and age related hearing loss in older people.
- Lopic acid has also been found to reduce age related hearing loss and tinnitus.
- Age related and noise induced hearing loss in mammalian cochlea shows that melanin and L DOPA can prevent these hearing loss.

- Omega-3 fatty acids leads to slow the gradual loss of hearing associated with age.
- Fatty acid intake was associated with lower risk of hearing loss in the old age. Amazing benefits of Gallic acid in age related vision and hearing loss was observed.
- Two months use of gallic acid leads to delay the progression of age related hearing loss.
- Several animal models have been used to study the presbyacusis, the glycine is neuroreactive and receptor binding in the cochlear nucleus which helps to reduce age related sensory neural deafness and tinnitus.
- Histadine is useful in sudden and age related hearing loss by preventing macular degeneration.
- methocondria take centar stage in aging and neurodegeneration the methionine helps to reduce neurdegeneration in age related hearing loss
- Decrease in level of amino acid ie. Tyrosine leads to hearing loss in old age.
- Lecithin reduces age related hearing loss.
- Glycine is the essential inhibitory neurotransmitter in mammals , it helps in age related hearing loss.
- linolenic acid deficiency causes age related hearing loss.
- lysine helps to reduce oxidative damage and prevention of age related hearing loss.
- Oleic acids regular use leads to preventon in age related hearing loss.
- Phenylalanine and thyrosine is useful in age related hearing loss in dogs.
- Magnesium is usefui in age related hearing loss. It is also involved in homocystine metabolism which is also helpful in noise induc ed hearing loss
- Proline has neuroprotective effects which help in preventing of age related hearing loss.
- Proteins help to improve the function of hair cells in inner ear and thus leads to prevent and reduce age related hearing loss.
- Valine is useful in age related sensory neural hearing loss.
- These ingredients are very useful in regeneration of neurons and neuro protection; hence it works in tinnitus associated with senile deafness.
- MODE OF ACTION OF DRUG ACCORDING TO AYURVEDA

DISCUSSION ON CLINICAL STUDY

- Age related hearing loss is commonly found after 50 years of age.
- Both male and female are sufferers, but females are more in number.
- There are significant changes in audiogram of trial group after treatment of Kapikachhu Ghana Vati. In control group, no treatment was given to the patients, only Audiometry was done but there were no significant changes noticed in sixty days.
- In present study Hearing loss is found in all patients but the severity associated symptoms karnanada was varies each and every patient, it indicates that age related deafness occurs only with, difficulty in hearing or associated with symptoms.
- After doing the comparison between trial and control group, no significant changes were found in control group because no treatment was given to this group.
- But in trial group, the results are encouraging after the treatment of Kapikacchu Ghan Vati.
- karnanada also improves significantly after treating with Kapikachhu Ghana vati.

CONCLUSION

- Karnanada associated with senile deafness is unilateral or bilatral
- Oral administration of Kapikachhu Ghana vati reduces difficulty in hearing.
- Kapikachhu Ghana vati reduces karnanada associated with senile hearing loss
- Kapikachhu Ghana vati gives significant changes in audiogram.
- No other toxic effects of 'Kapikachhu Ghana vati' were noted in this present study.

So "Kapikachhu Ghana Vati" is effective in age related sensory neural deafness and tinnitus associated with senile deafness.

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