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EVALUATION OF EFFECT OF HINGU- PIPPALI YOGA IN RESPIRATORY DISORDERS CAUSED DUE TO AIR POLLUTION IN TRAFFIC POLICE

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INTRODUCTION :

Soil, water, air and atmosphere are the basic variables for all individual from ecosystem1. Any adjustment in these elements influences the entire biological community. Of these components, air supposedly gets contaminated effectively with mechanical, vehicular, residential wellspring of fuel and influence the wide populace in the meantime. The air contaminations influence Human being as oxidative worry in the upper and lower airways2.

Concurring the studies in the natural status report 2004, Pune is a standout amongst the most quickly developing metropolitan urban areas of the nation. The general development rate of activity is 25%. A Punekar produces day by day 3.5439 particulate issues influencing human wellbeing. Around 300 new engine vehicles are being included every day in Pune locale. Alongside this the expanded modern development in and around the city play its own toll.3 The real essential contaminations are nitrogen oxides (NO2 or NOx), unstable natural mixes (VOCs), carbon monoxide (CO), and sulfur dioxide (SO2 or SOx). The particulate issue can infiltrate into the respiratory framework causing lung tissue aggravation and long haul issue 4.

In metropolitan urban areas movement police posted at occupied crossing points for 8-10 hours day by day where they are presented to abnormal amounts of air contamination and at higher danger of prohibitive lung issue. The basic respiratory side effects in rush hour gridlock police are Kasa (Cough), Shwasa(Dyspnoea), Patishaya(Rhinitis), Swasavradha(difficulty in relaxing). These indications drive the person to make rehashed visit to doctor. Traditional symptomatic treatment gives brief help in the side effects however the lung limit of the subjects diminishes dynamically and may prompt genuine medical issue.

Air contamination initiated respiratory confusion can be likened with the Ayurvedokta Vishdushita Vayujanyavikar. Hingu-Pippali Yoga has been endorsed for respiratory clutters caused because of presentation to Vishdushita Vayu.5

This definition isn't just satisfactory yet additionally practical, henceforth was picked with the target to assess impact of Hingu-Pippali Yoga in the administration of respiratory issue caused because of introduction of contaminated air in the rush hour gridlock police.

METHODOLOGY :-

The test medicate Hingu-Pippali Yoga, is a. blend of Hinga(Ferula foetida. Regel) and Pippali(Piper Longum Linn.) with the Anupan sugar and nectar. The test sedate was produced in the drug store of Bharati

Vidyapeeth Deemed University College of Ayurved following every one of the rules of Sharangadhar Samhita and Standard Operating methodology of GMP. The verification and institutionalization of the crude medication and the completed item were done according to the Ayurvedic established textual6 and Ayurvedic Pharmacopeia India guidelines7-8. The extent of the fixings and Anupan was concluded according to the rules of Sharangadhar Samhita9.

For this open clinical interventional think about, movement police presented to 7-8 hrs of air contamination of either sex indicating respiratory confusion with 4-5 side effects of the accompanying Kasa(cough), Ṣhwasa (dysponea), Pratiṣhyaya (wheezing), Shukapurna-Galasyata(congestion of throat), Kaṇthe kaṇdu (tingling impression of throat), Svarbheda (horseness of voice), Pinas (sinusitis), Repeated visit to doctor and target cirteria i.e. deviation from the ordinary in the spirometeric parameters were chosen with earlier educated assent. Morals panel endorsement was taken earlier the conduction of clinical Study. As the preliminary medication is of Ushna Tiksha properties the subjects with Ekantik Pitta Prakritee have been avoided from the investigation.

At first 200 subjects were screened of which 90 subjects were demonstrating physical indications. At the point when these were additionally screened for lung work test with spirometer 50 patients indicate irregular changes. Out of these 50 subjects 16 were prohibited because of the corresponding condition like hypertension (150/100mm/Hg), diabetes mellitus, cardiovascular malady, Angioplasty, aspiratory tuberculosis, lung harm, pleural emission, and 10 licenses were barred because of presentation period under five years. Along these lines at long last 24 subjects were enlisted for the clinical preliminary and arbitrarily distributed in two gatherings i.e. 12 subjects in each gathering. Of these 2 subjects in each gathering dropped out because of move in working spot or did not pursued the treatment plan. In this way add up to 20 patients could finish the investigation with 28 days intercession 10 in each gathering as pursues:

1) Group-A: Control gathering (taking symptomatic treatment)
2) Group-B:- Trial Group (taking symptomatic treatment alongside preliminary medication)

The test sedate Hingu-pippali yoga was managed two times every day in portion of 250 mg. for 28 days with nectar and sugar with the ordinary follow-up of 7 days interim for the emotional parameter and Lung work test with Spirometer and Heamogram was done at the season of commencement and toward the finish of the mediation (Pre and Post) as target parameters. For account of the adjustments in the abstract criteria, degree scale based on seriousness of side effects according to the rules of American Cancer Association was pursued.

RESULTS:-

The statistic information viz. age, weight and stature was equivalent in the two gatherings. The span of obligation in years was relatively equivalent in the two gatherings, i.e. 5.9 years in charge and 5.7 years in preliminary gathering.

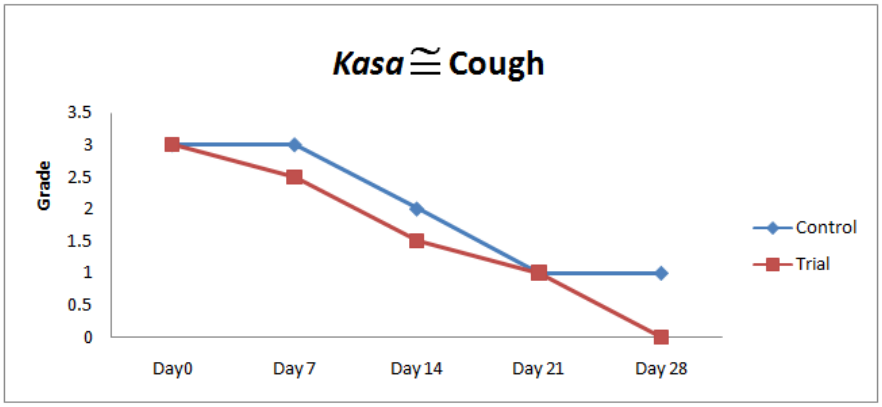
Table No.1: Demographic details of the participants enrolled for the clinical evaluation of *Hingu-Pippali Yoga*.

Parameter	Control Group	Trial Group
Age (Years)	37.5 (28-55)	29 (27-54)
Weight (Kg)	76.1 ± 9.81	75.6 ± 7.47
Height (Cms)	171.4 ± 4.45	172.3 ± 4.24
Duration of duty (Years)	5.9 ± 0.88	5.7 ± 1.06

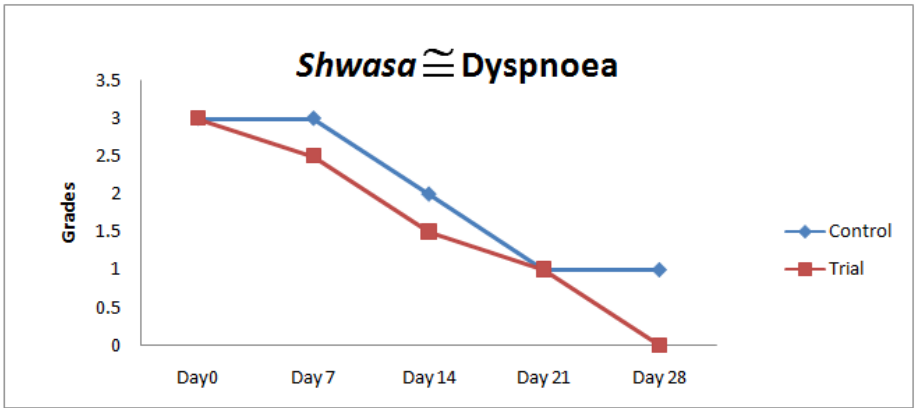
Information introduced as Mean ± SD if there should arise an occurrence of typically appropriated information and Median (Range) in the event of information not disseminated regularly It has been seen that the side effects Kasa @ Cough, Shwasa @ Dyspnoea, Shvasavarodha @ Difficulty in breathing,

Pratishaya @Rhinitis identified with respiratory framework are most normal and found in every one of the members. The impact of test sedate is appeared in the accompanying charts.

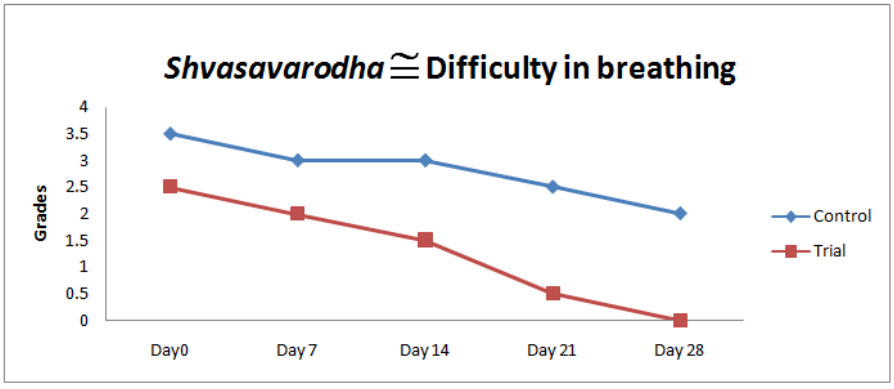
Graph No.1- Effect of *Hingu- Pippali Yoga* on the symptom *Kasa* ≅ Cough.



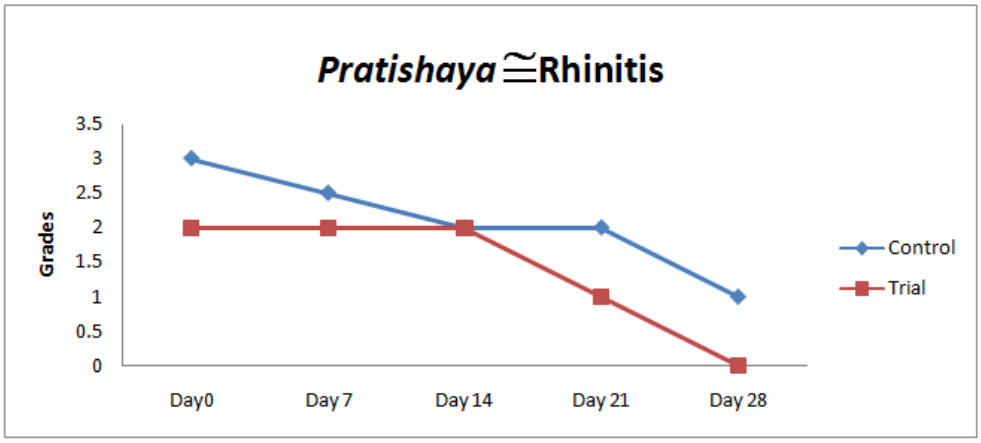
Graph No.2- Effect of Hingu- Pippali Yoga on the symptom *Shwasa* ≅ Dyspnoea



Graph No.3- Effect of Hingu- Pippali Yoga on the symptom *Shvasavarodha* ≅ Difficulty in breathing.



Graph No.4 - Effect of Hingu- Pippali Yoga on the symptom *Pratishaya* ≅Rhinitis



It is obvious from the chart that the abstract parameters viz. Kasa, Shwasa, Shwasavroth, Pratishaya demonstrated huge decrease (p<0.001) in preliminary gathering though in charge assemble the side effects are available till the finish of study period showing the enhancement in the wellbeing status of subjects accepting preliminary medication.

Table No.2- Effect of *Hingu- Pippali Yoga* on the Biochemical Parameters.

Parameter	Control		Trial	
	Pre	Post	Pre	Post
Hb	14.96 ± 1.05	14.62 ± 0.96	14.4 ± 1.25	14.45 ± 1.23
TLC	7660 ± 1460.7	7680 ± 1426.6	7090 ± 1283.6	7385 ± 1012.7
Neutrophil	52.8 ± 5.03	52.2 ± 5.49	52.7 ± 6.57	52.6 ± 8.91
Lymphocyte	34.2 ± 4.64	34.7 ± 4.60	37.5 (22-50)	40 (22-45)
Eosinophils	9 ± 5.52	10.4 ± 5.06*	8.6 ± 3.60	3.9 ± 1.20**@@
Monocytes	3.4 ± 1,65	2.3 ± 2.06	2 (0-4)	3.5 (1-7)
ESR	12.3 ± 2.95	13.3 ± 3.27**	11 ± 3.97	8.8 ± 3.05**@@

Information communicated as Mean ± SD if there should be an occurrence of ordinarily dispersed information and Median (Range) if there should arise an occurrence of not typically disseminated information.

Here*p<0.05, **p<0.01 when contrasted with pre-treatment utilizing Paired t test and @@p<0.01 when contrasted with Control aggregate utilizing Wilcoxan Rank Sum Test.

As appeared in the table the eosinophil check in charge assemble demonstrated height in the qualities in post treatment test when contrasted with per treatment test showing dynamic unfavorably susceptible reaction of body, while in trail amass these qualities are fundamentally lessened. This underlines the impact of test medication to decrease the unfavorably susceptible pathology caused because of toxins of air contamination.

If there should arise an occurrence of Erythrocyte Sedimentation Rate (ESR) likewise it has been seen that there is a critical bring up in the post treatment test in charge aggregate demonstrating crumbling in the wellbeing status of subjects not getting test medicate. Anyway the preliminary gathering accepting test medicate demonstrated critical decrease in the ESR esteems characteristic of the improvement of safe arrangement of the subjects. Rest of the biochemical parameter did not demonstrate any huge change in the pre post esteems.

Table No.3- Effect of Hingu- Pippali Yoga on the Lung Function Test.

Parameter	Control Group		Trial Group	
	Pre	Post	Pre	Post
FVC Observed	2.72 ± 0.31	2.28 ± 0.27	2.77 ± 0.38	3.63 ± 0.28
FVC Predicted %	70 (62-80)	61 (49-67)	69 (60-80)	89 (84-101)
FEV1 OBS	2.42 (1.84-2.73)	2 (1.44-2.26)	2.30 (2.13-3.07)	3.08 (2.79-3.56)
FEV1% Predicted	72.5 (63-88)	62 (48-72)	73.5 (66-84)	94.5 (87-112)
FEV1/FVC	88.7(75.9-92.4)	86.35 (77.5-96.3)	89.75 (79.3-93.1)	87 (83.6-93.5)
FEV1/FVC%	109.2 ± 5.22	107.1 ± 8.21	109.7 ± 5.58	107.5 ± 4.48
MVV	84.35 (64.4-95.6)	70.2 (50.4-79.1)	80.15 (74.2-107.5)	107.65 (97.7-124.6)
MVV%	61.1 ± 7.09	51.9 ± 5.97	62.9 ± 5.91	81 ± 5.46
PEF	5.79 ±1.23	4.66 ± 1.33	6.36 ± 0.62	8.39 ± 0.96
PEF%	64.6 ± 10.08	55.1 ± 8.70	70 ± 5.42	92.3 ± 11.13

In this manner the blood examination uncovered critical decrease in eosinophil check and ESR demonstrating by and large working of the insusceptible framework. This outcome in the decrease in the rehashed visits of people devouring preliminary medication to the facility for different medical problems for the most part identified with respiratory tract.

Information displayed as Mean ± SD in the event of ordinarily circulated information and Median (Range) if there should be an occurrence of information not dispersed typically.

Aspiratory Function Tests like FVC, FEV1, MVV and PEF demonstrated huge outcomes showing the expansion in lung limit in preliminary gathering while in control aggregate there is dynamic decay of the lung limit because of contamination.

DISCUSSION:-

Amid the investigation it has been seen that the police working at movement intersection with the period over multi year are more inclined to wellbeing peril of upper respiratory tract and furthermore indicate proof of diminished lung limit on spirometeric parameters.

The test sedate utilized for this examination is the blend of Pippali (Piper longum Linn.) and Hingu(Ferula foetida Regel.). Out of this Pippali is a medication that has been utilized most as a fixing in around 324 details portrayed in different accessible writings. Plausible impact of Hingu-Pippali Yoga might be added to the Rasayana activity of the Pippali on Pranavaha strotos .

As indicated by the Samanya– Vishesha standard, Pippali with the inverse Gunas like Katu Rasa, Laghu and Tikshna Guna, causes mitigation of Kapha Dosha which forces inverse properties like Madhura, Guru, Manda. Pippali with Tikshna Guna causes Bhedana of Kapha, which is adhered to the Srotasa by Picchila and Sandra Guna. When the Dushit Dosha gets isolated from the Srotasa, the Ushna Guna of the medication causes Vilayana of Kapha and produces simple expectoration. Evacuation of dushit Kapha causes Srotoshuddhi and consequently remembers, Vata Sanga. This revises Vimarga-gamana of Prana and Udan vayu, thus Pranavaha strotodushti. That prompts lightening in the side effects like Kasa , Shwasa, Pratishaya and Swasavrodh.

Other than this it likewise groups the properties Deepan, Pachan and Agnivardhan which enhances the digestion at cell level and Aamapachan karma is seen. This outcomes in redress of Annavahastrotodushti and activity on Amashaya which is a Mulasthan of Pranavaha Strotas. The other element of the definition Hingu, is extraordinary compared to other vatanuloman medications and Deepan-Pachan in real life. This qualities further advances the activity of pippali to address Pranavaha Strotosang and at last demonstrates the Rasayana impact on Pranavahasrotas. The Anupan endorsed was Sharkara and Madhu. Of these Sharkara may help to eases undesirable impact of Pittavridhi which may cause due to Ushna Tikshna

properties of the Pippali and Hingu and serves to balances the general healing impact of home grown plan. The other Anupan, Madhu is a best impetus (Yogavahi) and Shleshmahar, having activity exceptionally on Pranavahastotas. In this way both the Anupan enhances the activity of Hingu Pippali Yoga and lessen undesired impact of the definition too. Consequently with the test tranquilize it has been seen that the side effects of Pranavahastrotasa demonstrated noteworthy decrease with the expansion in lung limit with enhancement in the estimations of FVC, FEV1, MVV and PEF in the subject getting test medicate.

CONCLUSION:-

In this way the critical enhancement in emotional and target parameters in the subjects accepting test medicate demonstrates that the natural definition Hingu-pippali yoga is viable to decrease the respiratory issue and upgrades the lung limit in subjects, delivered because of the presentation of air contamination.

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