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Conceptual Study of Antitoxic Effect of Ksharagad in Environmental Toxicity Induced Respiratory Problem

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Abstract
Even though coughing is a natural way to clear our airways, it can become chronic if we're constantly exposed to pollutants and irritants in the air. Air pollution, a major public health concern, is especially harmful to our lungs. Polluted air contains toxins that damage lung tissue and irritate the lining of our airways, leading to respiratory problems like childhood asthma. Studies have clearly shown a connection between air pollution and breathing problems. This article explores Ksharagad, a traditional Ayurvedic medicine described in the Brihatriyi Samhita, as a potential treatment for respiratory issues caused by environmental toxins. Ksharagad is said to have powerful ingredients that provide fast relief, making it a promising option for the increasing number of respiratory problems caused by environmental toxins.

Keywords: Air Pollution, Environmental exposure, Hazardous Chemicals, Ksharagad, Public Health, Respiratory Problems, Well Beings.

1. Introduction:

Our lungs are constantly under siege by the environment we breathe. Inhaled pollutants and pathogens can trigger a cascade of problems, leading to various respiratory illnesses. This review focuses on respiratory condition in Ayurveda believed to be exacerbated by environmental toxins. We will explore the potential of Ksharagad, a traditional Ayurvedic formulation, to counteract the harmful effects of these toxins and alleviate respiratory symptoms.

The Ever-Present Threat: Environmental Inhalation and Respiratory Woes: The air we breathe is not always pristine. It can harbor a multitude of environmental hazards, including industrial emissions, car exhaust fumes, and airborne allergens. These pollutants relentlessly bombard our respiratory system, causing a spectrum of illnesses. Chronic obstructive pulmonary disease (COPD), lung cancer, and allergic rhinitis are just a few examples related due to air pollution. These conditions significantly impact quality of life and healthcare costs, posing a major public health concern.

A Respiratory Manifestation [12,13] of Environmental Toxins: Kaas and Swasa describe in ayurvedic literature, represents all the respiratory manifestations. Refers to a respiratory disorder characterized by a persistent cough, wheezing, chest tightness, and shortness of breath, sensitive throat and mouth with congestions, itching, obstruction to passage. It is believed to be aggravated by environmental factors like

polluted air, dust, and smoke symptoms interference in harmony of life/well beings. The exact mechanisms by which environmental toxins trigger Kaas are still being elucidated, but it is likely linked to the inflammatory response triggered by inhaled irritants.

Understanding the Damage: How Environmental Toxins Affect the Lungs: Environmental pollutants can wreak havoc on the delicate tissues of the lungs. Conditions like COPD, characterized by excessive mucus production and destruction of the alveolar walls, are a prime example. Inhalation of these irritants triggers the release of reactive oxygen species (ROS) by the airway epithelium, leading to oxidative stress and subsequent damage to the epithelial lining.

Furthermore, childhood exposure to environmental toxins can have long-lasting consequences. Studies suggest a link between such exposure and the development of cough and wheeze in adulthood. The list of environmental culprits is extensive, including sulfur dioxide, nitrogen dioxide, silica dust, tobacco smoke, bioaerosols (airborne microorganisms), and occupational dust. These pollutants which are hazardous chemicals not only contribute to chronic cough but also pave the way for more severe respiratory issues.

To manage these toxicities more effectively with Vishghnkalp can be a good solution and useage of Agad had been mention in classic brihatrayi samhita. So the present study was planned to understand role of Ksharagad in environmental toxicity induced symptoms on respiratory systems. Ksharagad is the formulation described by by Brihatrayi Samhita. It is indicated for the treatment of conditions manifested by poison such as shotha(inflammation), respiratory ailements. Kaas shwas etc. The ingredients of ksharagad according to Brihatrayi Samhita include antitoxic drugs. These Antitoxic (vishghn) dravyas are used to treat variety diseases.

2. Aim:
To study the antitoxic action of ksharagad in environmental toxicity induced in Kaas.

3. Material and Method:
Researchers looked at classical Ayurvedic texts, specifically the Brihatrayi Samhita, to understand the ingredients of Ksharagad. They also compiled and analyzed research on these ingredients from various international journals. In addition, they reviewed descriptions of Ksharagad in the Brihatrayi Samhita. Finally, they conducted a comprehensive review of existing scientific literature on the topic. To reach their conclusions, they considered information found online, along with interpreting and comparing different research studies.

4. Result and Observation
Ksharagad posses 17 ingredients and maximum infact almost ingredients having research work on commen action of respiratory protective. Antibacterial, antiiflamatory, Antitoxic and antimicrobial, antioxidants. Ingredients of ksharagad according to acharya charak samhita along with ras panchak.

Table 1: Raspanchak [1]

Sr. No.	Drug	Botanical Name	Rasa	Guna	Veerya	Vipaka	Karma (Action)	Doshaghanta
1	Palasha	Butea monosp	Katu, Tikta,	Laghu, Ruksha	Ushna	Katu	Krimighna, Kushthaghn	Kapha-Vatashamaka

		erma Lam.	Kash aya				a, Vishaghna	
2	Gairik							
3	Haridra	Curcum a longa Linn.	Tikta, Katu	Ruksha , Laghu	Ushna	Katu	Krimighna, Kushthaghn a, Vishaghna	Kapha-Vatashamaka Tikta, Rasa-Pittashamaka
4	Daruhari dra	Berberis aristate DC	Tikta, Kash aya	Laghu, Ruksha	Ushna	Katu	Shothahara, Kandunasha ka	Kapha-Pittashamaka
5	Surasma njari	Ocimum sanctum Linn.	Katu ,Tikta	Laghu, Ruksha	Ushna	Katu	Shothahara, Krimighna, Vishaghna	Kapha-Vatashamaka
6	Madhuk a	Glycyrr hiza glabra Linn.	Madh ura	Guru, Snigdh a	Sheeta	Madh ura	Shothahara, Kandughna	Vata-Pittashamaka
7	Laksha	Laccifer lacca	Katu, Tikta	Laghu, Snig dha	Ushna	Katu	Kushthaghn a	Kaphavatash amaka
8	Saindha v	Rock salt	Lava na, Madh ura	Snigdh a, Tikshna , Sukshm a	Sheeta	Madh ura	Vrushya, Deepaniya	Tridoshhara
9	Jataman si	Nardost achys jatamans i DC	Tikta, Kash aya, Madh ura	Laghu, Snigdh a	Sheeta	Katu	Medhya, Balya, Kushthaghn aa	Tridoshahara
10	Harenu	Vitex Nigundu	Katu, Tikta	Laghu	Sheeta	Katu	Deepana, Pachana, Medhya, Vishaghna	Kapha-Vatanashaka
11	Hingu	Ferula narthex Boiss.	Katu	Laghu, Snigdh a, Teeksh na	Ushna	Katu	Deepana, Pachana, Rochana, Krimighna	Kapha-Vatashamaka

12	Shweta Sariva	Hemidesmus indicus R. Br	Madhura	Guru, Snigdha	Sheeta	Madhura	Kushthaghna, Vishaghna, Rochaka	Tridoshahara
13	Krushna Sariva	Ichnocarpus frutescens	Madhura	Snighdha, Guru	Sheeta	Madhura	Kushthaghna, Vishamjwaranashaka	Tridoshahara
14	Kushtha	Saussurea lappa C.B Clarke	Tikta, Katu, Madhura	Laghu, Ruksha, Teekshna	Ushna	Katu	Kushthaghna, Jwaraghna,	Kapha Vatashamaka
15	Shunthi	Zingiber officinale Rosc	Katu	Laghu, Snigdha	Ushna	Madhura	Shothahara, Deepana, Pachana, Vrushya	Kapha Vatashamaka
16	Maricha	Piper nigrum Linn	Katu	Laghu, Teekshna	Ushna	Katu	Deepana, pachana, Krimighna, Kushthaghna	Kapha Vatashamaka
17	Pippali	Piper longum Linn	Katu	Laghu, Snigdha, Teekshna	Anushna sheeta	Madhura	Krimighna, Kushthaghna	Kapha Vatashamaka
18	Bahlika	Crocus sativus Linn	Katu, Tikta	Snigdha	Ushna	Katu	Shothahara, Deepana, Pachana	Tridoshahara

Table 2: Chemical Constitution [4-5]

Palash	Tannic acid, kino oil, kino acid, flavonoids.
Haridra	1percent volatile oil, resin
Daruharidra	Columbamine, oxycanthine.
Suras manjiri	Basil camphor
Madhuka	Glycyrrhizine
Laksha	Resin
Jatamasi	1percent volatile oil, 6ercent resin
Harenu	Phenol
Hingu	Antioxidant, volatile oil, resin.
Kushtha	Essential oils castol

Shunthi	Gingerine(pungent resin)
Maricha	Piperine
Pippali	Resin, volatile oil, resin 1_2percent
Bahlika	Carotenoid, Thiamine, essential volatile oil

5. Discussion

Haridra (Curcuma longa Linn) (Curcuma longa Linn) [2,8,9] has antitoxic action of Dosha karma kapha vataghna due to it's tikt and tikshna properties. Turmeric is useful is an expectorant kapha (mucous). Kapha can be treated turmeric inhaltion of turmeric smoke reduces kapha.

Daruharidra (Berberis aristate DC) has Kphaghana due to it's properties. Hence used in disease originating from kapha. It is useful I treatment of kaasa being kphaghana. Shows antiiflamatory and anti allergic properties. It shows anti allergic and anti inflammatory properties. Due it's chemical Constitution help to act an anti allergic agent.

Tulsi is Kapha vatghana due to it's properties. Main action on respiratory system. Act as an expectorant and alleviate the symptoms like cough induced by kapha.

Mulethi (madhuyashti) acts as an expectorant deu to its snigjdha and madhur properties. So it is used in kaasa. Due it's chemical Constitution it is anti inflammatory and anti allergic activity.

Jatamasi is tridoshghn specially it is kaphghn, effective in cough by Bitterness.

Pippali (Piper longum Linn) is kaphghna by its action due to its properties. Disorders related to kapha and vata it's main uses of shusk (dry) pimpli. Long peper is an excellent medicine for cough caused due to kapha dosha like asthama. It also act an expectorant and prevent the production of kapha mala. It strengthen the lung. It reverse the respiratory problems. It's chemical Constitution ability to control cough(kaas) and inflammation.

Maricha (Piper nigrum Linn) is vatghana due to it's ushna veerya properties. The fruit pulp has bitter resin. There is no better substance than pepper to reverse sluggishness ofpranvaha stotas and reduce the mucous secretion. Due to it's ushna veerya it act as shoshan the kapha dosha. Due to it's chemical Constitution it rejuvenating the respiratory system, and used in cough.

Sariva (Hemidesmus indicus R. Br) is tridoshghna due to it's properties, being kaphghna it is used in cough and asthama.

Hingu (Ferula narthex Boiss) is ushna, due to this properties it is kapha vataghna. It is useful in vata kapha disease. Being tikshna, antibacterial, kapha vatghana., it is useful in cough (kaas) and asthama and chronic cough. Due to chemical constituents resin it act as expectorant, used in asthama, chronic bronchitis, whooping cough. It is antioxidant protect body from free radical. Because of these it's having kapha and And vata shamak property.

kutha/ kushtha (Saussurea lappa C.B Clarke) is due to it's properties reduced kapha vata hence it is used in vata kaphvaha disease. It is kaphghna, expectorant and hence used in in cough (kaas), asthama.

Sounth/adrak (Zingiber officinale Rosc) is being katu, snigdha, ushna deu to this properties it os useful in kapha vatavaha disease. It is kaphghna, antihistamines by its properties of tikta and snigdha. Tenacious sputam of pharyngitis is relieved by chewing ginger. Charcoal ginger powder with honey is effective in asthamatic bronchitis.

Harenu/haritaki is kaphghna by its katu, tikta, akshay ras. Cogha(kaas) are relived by haritaki, as it reduces congestion. It is used in in asthama and cough.

Palash (Butea monosperma Lam) is due it's properties it kapha vataghna. Hence palash used in disorders induced by kapha vata dosha. it act as lekhan the kapha dosha.
Laksha (Laccifer lacca) is due to it's all properties it is vata kaphghana. It's antitoxic action of drug in cough(kaas). It is kapha vtaghana hence used in vata kapha disease.
Saindhav lavana (Rock Salt) is having lavana and madhura rasa. Snigdha, tikshna, sukshma guna, sheeta veerya and madhura vipak and bhedankarma due to all these properties it trodoshhara.
Bahlika (Crocus sativus Linn) is rich source of riboflavine and Thiamine, essential volatile oil, mild stimulant, promoter of immunity and it is used in cough and asthma.
Madhuka (Glycyrrhiza glabra Linn) is due to it's chemical Constitution it is used in cough. Shows anti-inflammatory and anti-allergic.
Thus in combination, the ingredients of this formulation act on respiratory systems to neutralize the Kapha (Phlegm) and reopen the blocked channels. Thereby decrease in the vitiated vata and ultimately reducing the hampered pathophysiology of respiratory disease. These constituents of the formulations also helps in increase in the (Agni) digestive and metabolic efficiency thereby correcting these both activities. This is in return helps in curing the respiratory ailments.

6. Conclusion

The ingredients in Ksharagad seem very effective. They work together to reduce coughs, improve digestion, and clear congestion, making them beneficial for respiratory problems. These ingredients have anti-allergic, anti-fungal, antibacterial, and anti-inflammatory properties. Ksharagad is also easy to formaulate and use, both internally and externally. While more research is needed to confirm its effectiveness against allergies, especially its ability to neutralize toxins, even more extensive studies are needed to understand its full potential in both pharmacology and clinical settings. These in-depth studies could solidify Ksharagad's place in traditional medicine and potentially lead to its use for other health problems. Overall, the ingredients in Ksharagad show promise for treating coughs caused by environmental toxins.

7. Further Scope

Further pre-clinical and clinical investigation are required to access the efficacy and safety of Ksharagad formulation in Human beings.

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