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ANTI INFLAMMATORY ACTIVITY OF SILVER NANOPARTICLES SYNTHESISED USING INDIAN HERBS -A REVIEW

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Abstract

Aim*: This study reviews the anti-inflammatory activity of Indian herbs using silver nanoparticles.*

Materials and Methods*: Data and all other information are collected from highly rated articles. Articles are taken from various search engines like PubMed, Google scholar, BioRXIV, Elsevier, MedRXIV. The year in which the data collected were from Jan 2010-May 2020, and the study was conducted in June 2020.*

Results*: The Review about the anti-inflammatory activity of silver nanoparticles synthesized using Indian herbs shows numerous health benefits of Indian herbs in the field of medicine. Herbs like turmeric, ashwagandha, peppermint, Curcuma longa helps to boost the immune system function and helps clear off toxins from the body. It helps to fight against urinary tract infections, obesity, arthritis, stomach disorders, heart failure, and impotence. It is a potent diuretic good for eyes and liver.*

Conclusion*: Silver nanoparticles have many benefits in various fields especially in health care. It is used in many ways in health care like for UV protection, topical ointments, creams and nutraceuticals, and biomedical for cancer therapy, drug delivery, diagnosis, and cell imaging. Indian herbs can be used for future medicine development to get a good prognosis from various types of cancer and other diseases.*

Keywords*: Anti-inflammatory, diseases, health care, Indian herbs, silver nanoparticles,*

Introduction

Nanotechnology in a widely fast developing branch which deals with the dimensions of the particle Size 1-100 nanometer. Nanotechnology is used in various great development fields and yields many benefits. [1] Nanotechnology is introduced into medicine to increase the standards of therapeutic drug design.[2]

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Inflammation is a local response of living tissue to injury due to any type of agent. It is a body's defense mechanism characterized by Pain, Swelling, heat redness, and loss of function.[3,4] Anti-inflammatory action is a process in which any kind of process or agent which reduces the inflammation of the particular Part. Anti-inflammation is achieved through medication and other factors.[5] The eco-friendly synthesis of nanoparticles is a revolutionary step in the field of nanotechnology. In the past few years, plants & herbs. mediated synthesis of nanoparticles has been gaining importance due to its Simple process & eco- friendly procedure.[6] The silver nanoparticles were characterized in forms of synthesis, UV- spectroscopy, Capping functionalities.

According to the study, it is shown that silver is the one of the most effective metal to be used in the size of nanoparticles and various medicinal fields [7] This study Provides further uses and evidence about the anti-inflammatory activity of Indian herbs using silver nanoparticles. Indian herbs are one of the best medicinal herbs that Can produce and give many types of medicinal benefits around the globe.[8] According to the study, Indian herbs are used as herbal medicines are promoting various healthcare uses which Can help a person relieve any kind of diseases and Other body related problems.[9]

MATERIALS AND METHODS:

In this study, the Data and all other information are gathered from highly rated and highly cited articles about the anti-inflammatory activity of silver nanoparticles. The article is taken from Pubmed, Google Scholar, BioRXIV, ChemRXIV, Elsevier, MedRXIV.
The Duration of the collected articles is from Jan 2010 - May 2020, because of the Updated information and knowledge about our study.

Articles are selected for the study are selected followed by this 5 step process [10]
They are,
1. Identification of clear objectives.
2. Identification of Relevant articles.
3. selection of the articles.
4. Data Extraction and charting.
5. Analysis and report
Inclusion criteria::
* silver nanoparticles
* Anti-inflammatory activity
* Nanotechnology
* preparation and characterization.
* Indian herbs
Exclusion criteria:
* Anti-bacterial property
* Anti- Microbial property
The Data collected were analyzed for its quality and other sorts of assessments. and segregated as strong, Moderate, and weak articles. Collected data are analyzed and Concluded.

DISCUSSION:

Silver nanoparticles and nanotechnology

Silver nanoparticles are formed when Silver ions dissociate and by a redox reaction. [11,12] Numerous shapes of nanoparticles can be produced depending on its application & uses. Silver nanoparticles paved a very high benefit in the healthcare field. Silver nanoparticles are used as a carrier for drug delivery with minimal side-effects.[13] The precision of drug delivery is high for silver nanoparticles. A large number of drugs can also be delivered to the required area on the tissues.[14] Once, Payload reaches the target, it releases it with internal or external stimuli.[15] Till now, among metallic nanoparticles, silver nanoparticles in the best choice to use in the field of biological systems, living organisms, and medicinal systems [16]. Using silver nanoparticles many properties of a plant Can be determined, such as Anti- Inflammatory, Antibacterial, Antimicrobial, Anti Scavenging property. Antifungal, Antiviral, Antiplatelet, anti-inflammatory properties. [17]

Indian herbs with anti-inflammatory uses :

Traditional medicines that are derived from medicinal plants are consumed by about 65% of the world population. Indian herbs are mainly used in the name of Ayurveda in India. [18] Ayurvedic medicines and herbs

help to cleanse the body, mind, and environment. [19] They are used as a part of a holistic approach to health Which may involve nutrition, yoga massage, aromatherapy, and meditation. more than 600 herbal formulas and 290 Single plant remedies are included in the pharmacy of Ayurvedic treatments.[20] Among these, most of the herbal Plants are Producing anti-inflammation activity with less and no side effects[21]
There are some of the Indian herbal Plants which have high anti-inflammatory activity are listed out here (Table.1) [22] These plants usable parts where Collected a, prepared and Consumed according to its application.

Table:1. Plants with anti-inflammatory effects and uses.

PLANT NAME	FAMILY	PART USED
Allium sativum	Liliaceae	Bulbs
Acacia catechu	Leguminosae	Bark and stem
Azadirachta indica	Meliaceae	Leaves
Berberis Asiatica	Berberidaceae	Stem
Abutilon Indicum	Malvaceae	Leaves
Andrographis paniculata	Acanthaceae	Aerial plant
Achyranthes Aspera linn	Amaranthaceae	Seeds
Alternanthera sessilis	Amaranthaceae	Leaves
Portulaca pilosa	Portulacaceae	Whole plant
Beta vulgaris	Amaranthaceae	Fruits
Bacopa monnieri	Scrophulariaceae	Whole plant
Bryonopsis laciniosa	Cucurbitaceae	Whole plant
Cassia fistula linn	Caesalpiniaceae	Roots, Leaves, Bark
Phyllanthus Polyphyllus	Euphorbiaceae	Whole plant
Sida acuta	Malvaceae	Leaves roots
Sterculia hance	Sterculiaceae	Seeds
Centella Asiatica	Apiaceae	Plant
Mentha spicata	Lamiaceae	Whole plant
Myrtus communis	Myrtaceae	Leaves
Elephantopus scaber	Asteraceae	Leaves
Curcuma longa	Zingiberaceae	Rhizome
Ocimum sativum	Labiatae	Leaf
Bahinia racemosa	Caesalpini aceae	Stem, bark
Cleome gynandra	Cleomaceae	Whole plant

Parthenium hysterophorus	Asteraceae	Leaves
Boswellia	Frankeniaceae	Stem

CONCLUSION :

The number of plants that have been asserted to possess anti-inflammatory effects is so much that evaluating all of them is out of the scope of this paper. Thus, we have Sufficed to mention some of the Plants which underwent more Research and are more evident. Indian herbal plants in the most important aspect of complementary Medicines. In the field of AYUSH, Indian medicines Paved a very important benefit and use. We studied some of the herbs Which have anti- anti-inflammatory properties in the high range[23] These plants have been evaluated for various experimental and clinical studies. Future Studies about Indian herbs may lead to the discovery of various health care benefits and lead to a healthy life.

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AUTHOR CONTRIBUTION:

The authors have carried out the study by collecting data from search engines and drafted the manuscript by necessary information. They have aided in the conception of the topic, have participated in the review, and have supervised in preparation of the manuscript. The authors have participated in the study design and have coordinated in developing the manuscript. All authors have discussed the study details among themselves and contribute to the final manuscript.

CONFLICT OF INTEREST: None to declare.

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