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A Review on Ashwagandha and Triphala for Treatment of Cataract

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Abstract:- This article's goal is to review the available data about triphala's therapeutic use and efficacy. One of the earliest forms of medicine seen in conventional medical systems like Ayurveda is the use of herbs. A staple of gastrointestinal and restorative treatments is triphala, a popular and highly effective polyherbal herbal drug composed of the fruit of the botanical different species Emblica officinalis (Amalaki), Terminalia bellerica (Bibhitaki), and Terminalia chebula (Haritaki).Emblica officinalis, Terminalia chebula, as well as Terminalia belerica combine to form Triphala (TP). The goal of the current investigation was to evaluate its anti-cataract efficacy using both in vitro and in vivo tests in an experimental model of cataract caused by selenite.

Keywords:- *Ayurveda, Anti-Inflammatory, Immunomodulating, Microbiota, Antioxidant, Antimicrobial.*

I. INTRODUCTION: CATARACT

A hazy region in the lens known as a cataract causes the eye's sensation of vision to degrade. Cataracts can harm either of the eyes and often grow slowly. Additional indications and symptoms includes fading colours, double or blurry vision, sensitivity to strong lights, and night blindness. Driving, reading, or recognising people might therefore become difficult.

II. TYPES

Cataracts can develop in any part of the lens, and their names correspond to the layer from which they arise. The following are the categories:

Nuclear cataracts

This form of cataract, sometimes called a nuclear sclerotic cataract, is the most common type that doctors see. If they live long enough, the majority of individuals ultimately get one. They form in the nucleus, also known as the lens's core. As they deteriorate, reading comprehension and eyesight can potentially get better. It's called second sight, even if it's just momentary. Over time, the lens hardens and can turn brown or yellow. At night, you see halos around lights, your eyesight becomes less detailed, and the colours become less vivid.

A. Cortical Cataracts

They develop in the cortex, which is your lens's outermost layer. They begin as triangle-shaped, white wedges pointing in the direction of your eye's centre. The light from them diffuses as they get bigger.

The primary signal is glare. It could be difficult for you to drive at night. Additionally, they could make it seem as though you are viewing through a mist. It might be challenging to estimate how far an object is from you or distinguish between colours that are similar.

You often get them removed as soon as possible since they can cause both near and distant vision impairments.

B. Posterior Sub Capsular Cataracts

These form directly behind the area of your eye that encloses and holds the lens in place, known as the lens capsule. When light passes through the lens, they are exactly where it should be. They progress more quickly than other types of cataracts, and symptoms may appear within months. They make it harder to see in bright light and obstruct your near vision.

C. Anterior Sub Capsular Cataracts

This kind develops directly towards the front of the eye capsule. One may result from an eye injury or oedema. So too may atopic dermatitis, a kind of eczema.

D. Congenital Cataracts

These are the cataracts that either develop in childhood or are present from birth. Some are inherited, while others are the result of a disease your mother contracted while she was pregnant, such as rubella.

If they ' re situated little or not in the middle of their lens, they might not need to be treated. However, if an infant is born having an eye that hinders vision, a doctor has to remove it since it might impede the other eye from learning to see.

E. Traumatic Cataracts

Cataracts can result from a variety of traumas. One can be sustained by a splinter, burn, chemical, or ball strike to the eye. The cataract may appear shortly after the damage or it may take years for it to manifest.

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F. Secondary Cataracts

Numerous traumas can lead to cataract development. Splinters, burns, chemicals, and ball strikes to the eye can all cause one. The cataract may develop quickly following the injury or it can take years.

G. Radiation Cataracts

You may already be aware of how crucial it is to shield your skin from ultraviolet (UV) radiation from the sun, but UV radiation may also harm your eyes. If you spend a lot time in the sun without using eye protection, you may get cataracts.

Those who labour outside, such as farmers and fishermen, are more susceptible to this type of cataract. Put on sunglasses that offer completely UVA and UVB protect to avoid it.

Another potential adverse effect of radiation treatment for cancer is cataract development.

H. Lamellar Or Zonular Cataracts

This kind usually affects both eyes and younger children. They are inherited from parents by their offspring. These cataracts may develop into a Y-shaped patch of tiny white dots in the very middle of the lens. The lens's whole centre might go white over time.

Doctors refer to a cataract as secondary when it develops as a result of another illness or medical procedure. Possible reasons include diabetes, steroid usage (such as prednisone), and cataract surgery.

I. Radiation Cataracts

You may already be aware of how crucial it is to shield your skin from ultraviolet (UV) radiation from the sun, but UV radiation may also harm your eyes. When you spend a lot of time in sunlight without using eye protection, you may get cataracts.

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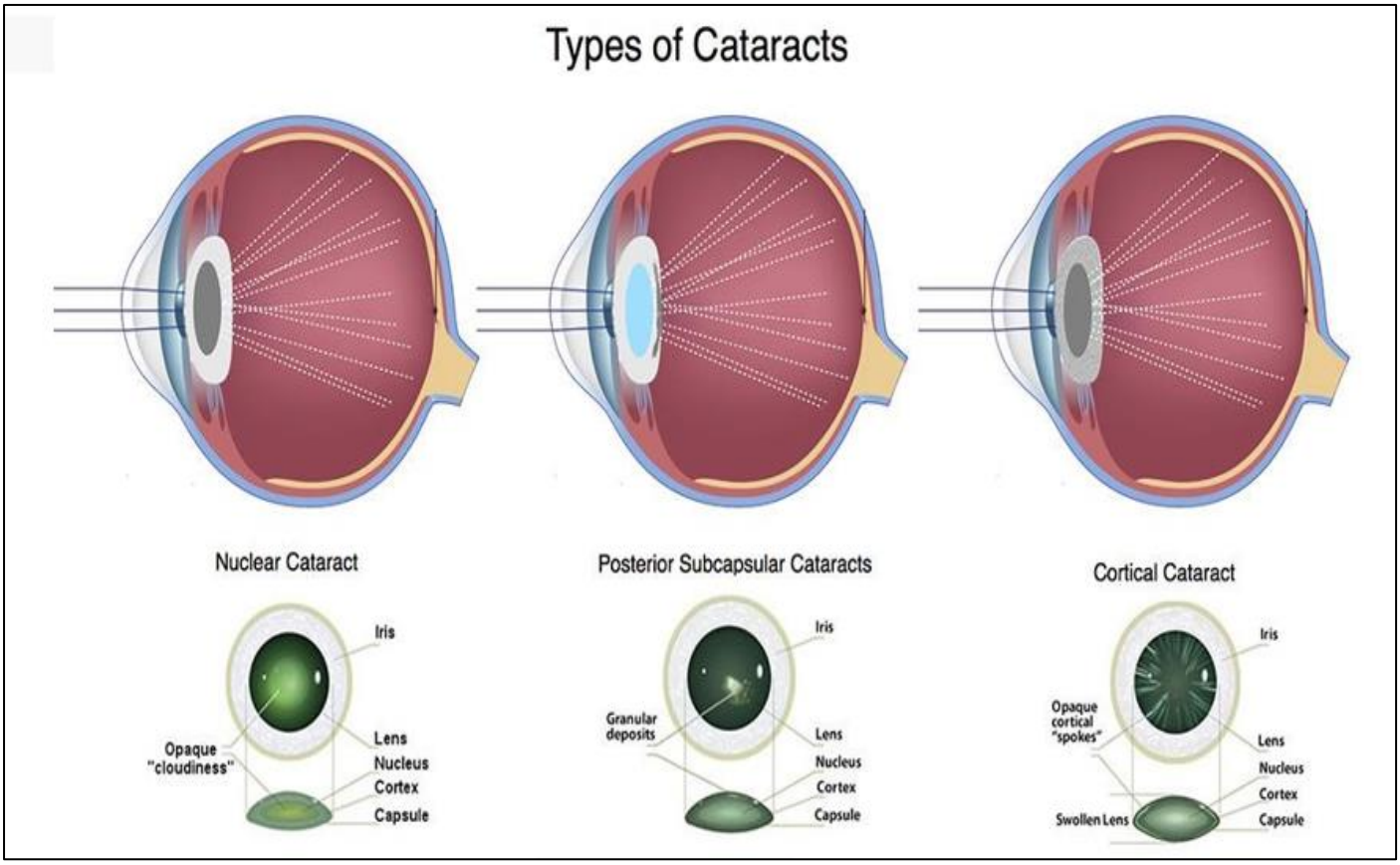

Fig 1: Types of Cataract

J. Brunescent Cataracts

A nuclear cataract becomes extremely hard and brown if left untreated. We refer to this as brunescent. You find it difficult to distinguish between colours, particularly between blues and purples. Compared to earlier therapy, surgery to remove it is more difficult, time-consuming, and dangerous.

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➢ *Structure of Eye & Lence: Introduction*

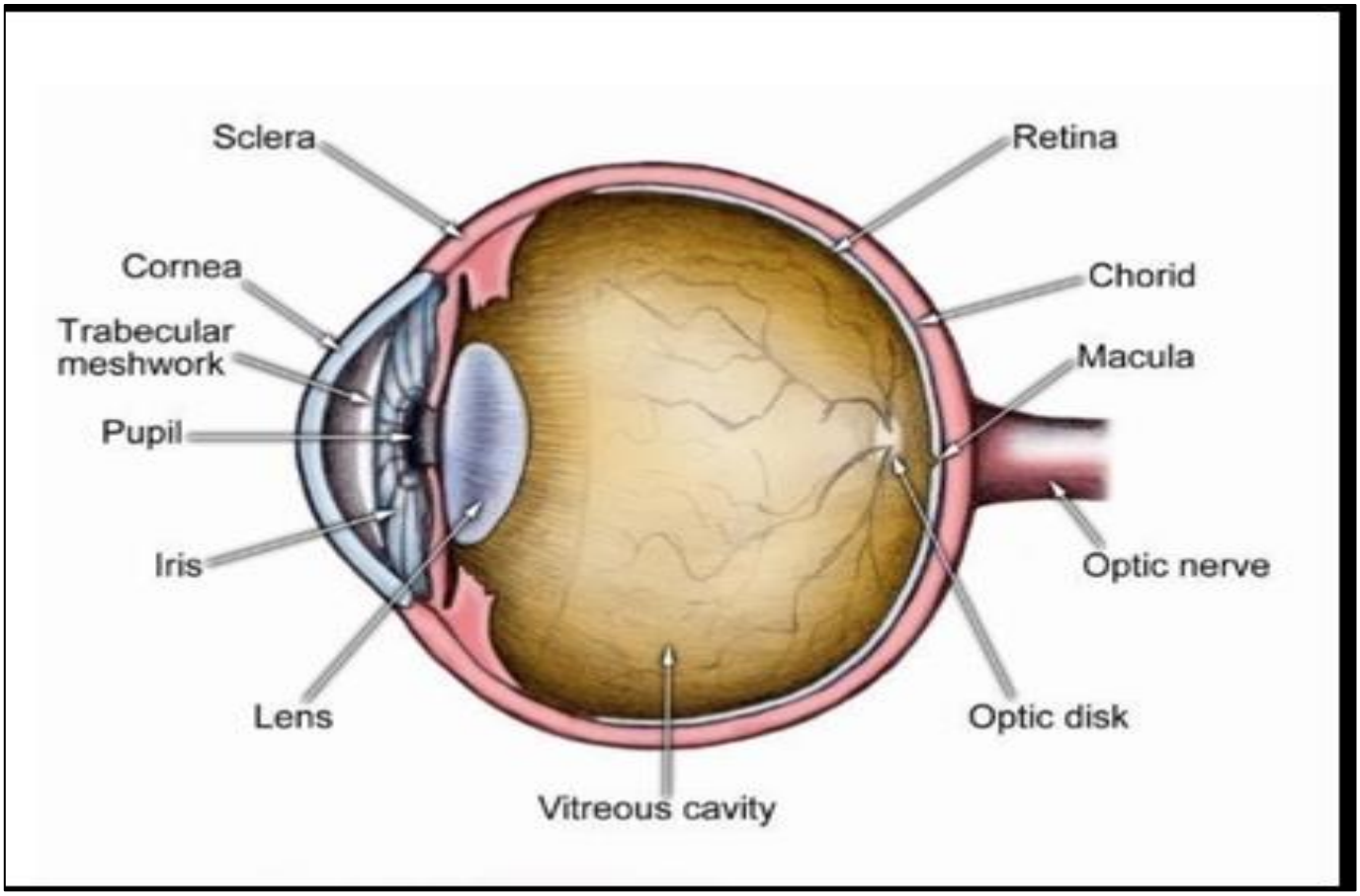

Fig 2: Structure of Eye

➢ *Causes Occur Weak Eyesight and Cataract:*

Age or trauma-related alterations to the tissue that makes up the lenses of the eye are the primary cause of cataracts. The proteins and fibres in the lens begin to deteriorate. This causes blurry or cloudy vision.

Certain inherited genetic defects may increase your risk of acquiring cataracts and other health problems. In addition, previous eye surgery, other eye disorders, and other illnesses like diabetes can all contribute to cataract development. Long-term steroid medication use may potentially result in cataract development.

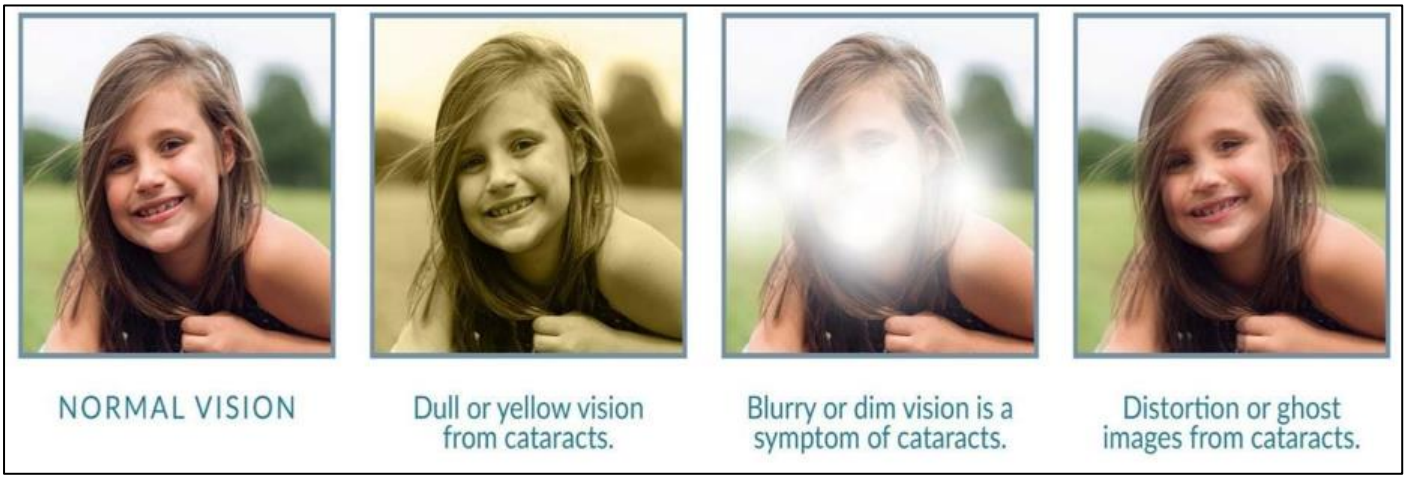

Fig 3: Cataract Vision and Normal Vision

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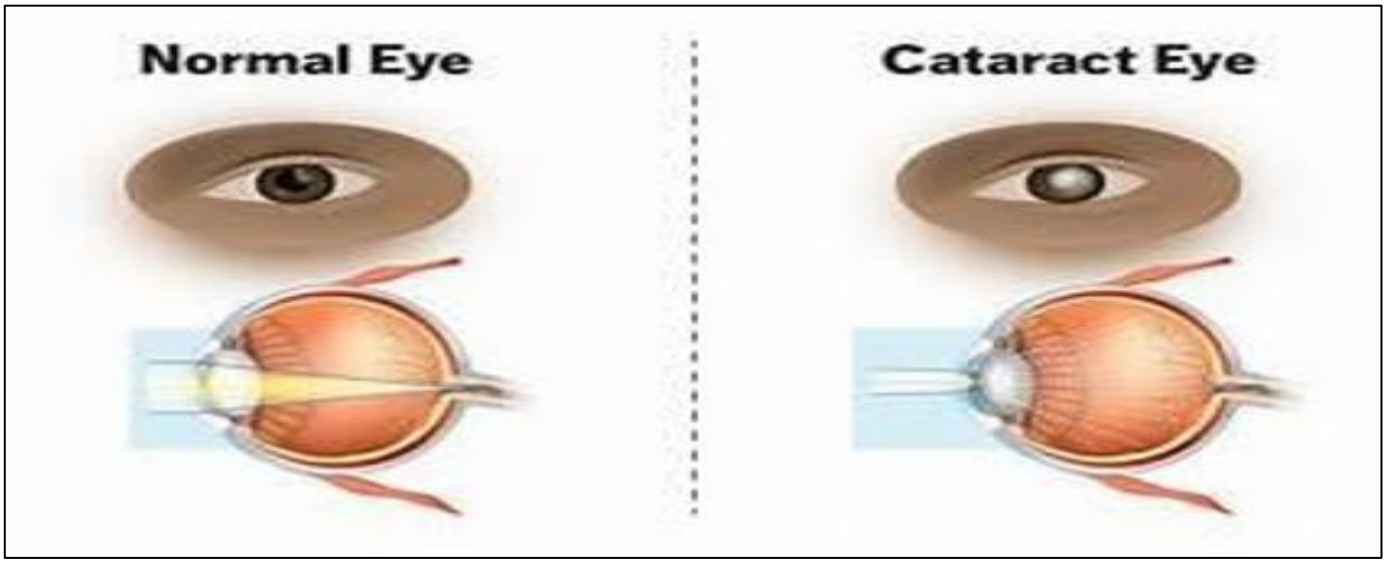

Fig 4: Normal Eye v/s Cataract Eye

III. HERBAL COMPONENT

A. *Triphala*

- *Amalaki (Amala)*
- *Hauitaki (Harade)*
- *Bibhitaki (Behead)*

The three fruits or plants that make up triphala are "Haritaki, Bibhitaki, as well as Amalaki." It is called Tridoshic Rasayana in Ayurveda, which indicates that it is a remedy that balances the Pitta, Vata, and Kapha doshas. It is abundant in antioxidants, such as vitamin C, which supports the development of the immune system. Taking Triphala supplements on an empty stomach prior sleep can be helpful for inner cleaning due to its detoxifying property; consuming Triphala churna can help with weight loss because it significantly reduces energy intake and body fat; consuming Triphala powder with milk or using Triphala capsules can alleviate constipation because of its laxative qualities.

Applying a paste consisting of triphala and coconut oil to the face can enhance the suppleness and texture of the skin due to its anti-aging characteristics. Because triphala has antioxidant properties that support eye health, it is also beneficial to the eyes. It is safe for all skin types, though using Triphala with coconut oil is advised if you have dry skin. Taking too much Triphala may cause diarrhoea.

Fig 5: Triphala

- The combination of Triphala and Ashwagandha is generally safe and well-tolerated, but like any supplement, it can interact with medications or have side effects in certain people.
- It is advisable to speak with a licensed healthcare professional prior to beginning a new supplement program., especially if you have a medical condition or take prescription drugs.

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- Amla, haritaki, with bibhitaki are the three fruits that make up the Ayurvedic herbal combination known as triphala. It is known for its ability to support digestive health, improve immune function, and promote healthy skin. Ashwagandha, on the other hand, is an adaptogenic herb that is commonly used to reduce stress, anxiety, and fatigue.
- It also has anti-inflammatory and antioxidant properties. When combined, Triphala and Ashwagandha can provide a synergistic effect that enhances their individual benefits. For example, Triphala can help improve the absorption and bioavailability of Ashwagandha, while Ashwagandha can help reduce any potential digestive discomfort caused by Triphala.

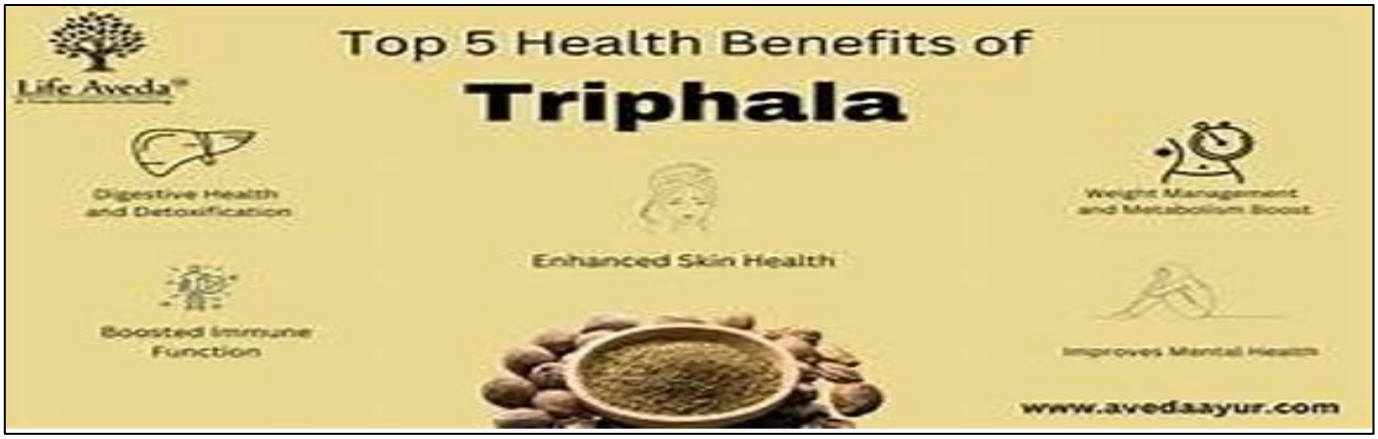

Fig 6: Benefits of Triphala

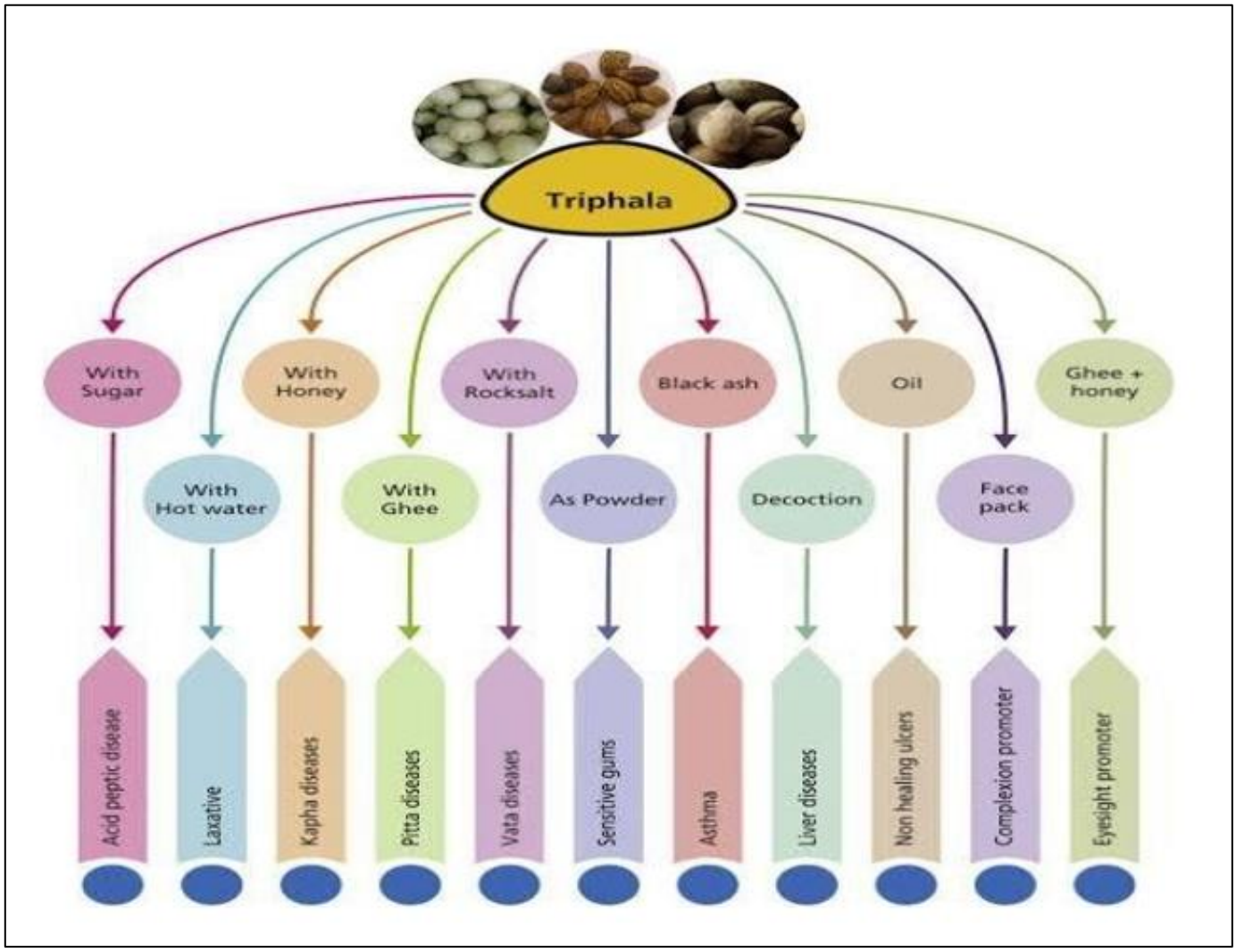

Fig 7: Uses of Triphala

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➢ *Amalaki*

- Synonums–emnlica,amala
- Biological Source: this includes both fresh and dried emnlic officinalis fruit.
- Family_euphoubiaceae
- Geographical Source – small-medium sized trace found in all india ,shrilanka and Myanmar
- Chemical Constitute–vitamin-c, Crucial acid, alagic acid

Fig 8: Amla

➢ *Morphological Characteristics:*

- Colour: green, becoming pale yellow or brick red as it ages
- Odour: none
- Taste: sore and astringent
- Shape: globular
- Size: 1.5 to 2.5 cm in diameter
- Odour: none

➢ *Used*

- Diuretic
- Diabetes
- Laxative
- Improve eyesight – anti oxidative
- Dried fruits used in haemouahage

➢ *Haritaki*

Fig 9: Haritaki

- Synonyms: haude, haritaki
- Biological Source– myrobalan contain dried ,ripe and fully matured fruits of Terminalia chebula
- Family: combuetaceace
- Geographical source : mainly South asia fruits india and Nepal,asssam ,MP, bihar Maharashtra, west Bengal
- Chemical Constitute: ellagic, gallic acid content

➢ *Used*

- Laxative
- Astaigent
- Stomach.

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➢ *Baheda*

Fig 10: Baheda

- Synonyms: bayada, bibhitaki, bekeuic, myrubalan
- Biological Source: It is made up of dried, ripe Terminalia beleaica fruits.
- Family: bibitaki fruits contain several phytochemical constituent

✓ Beta–sitosterol
✓ Gallic acid
✓ Ellagic acid
✓ Ethyljallate
✓ Cardiacglycoside

➢ *Morphological Characteristics:*

- Colour : Fruits have a dark brown to black colour
- Odour: no smell
- Taste: Astringent taste
- size:1.3to2cm in length
- Shape: fruits are spherical shape
- Uses: astringent, diaruboea ,constipation , demulcent and purgative

➢ *Action of Triphala*

Three content Amalaki(amala), Hauitaki(harade), Bibhitaki(behead)

- Mixed these three component
- High anti oxidative & anti diabetic activity for eye health
- Strees reducing potential of triphala
- Radio pastective effect of triphala
- That next anti-tumjual activity
- Also used constipation activity and detaxifaction

➢ *Our New Component*

- *Ashwagandha:*

Fig 11: Ashwagandha

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- Biological Source: Dried root & stem based on with an somnifera
- Family: solanaceae
- Geographical source: Jordan, Pakistan, Egypt, gujrat, Punjab, rajastan, UP, MP
- Harvesting in last march

➢ *Uses:*

- High anti oxidative effect
- Decrease glucose level
- Anti–stress activity
- Anti tumour activity
- Widely used sex stimulated
- Sedative and hypnotic
- Hypotensive, respiratory stimulant action with buadyudia
- Size: length 10-17mm
  Width 6-12 mm
- Shape: conical or cylindrical,straight,unbranched
- Colour: acrayish yellow
- Odour: fainty pungent and characteristic
- Taste: mucilaginous , acrid and bittery

✓ **Steroidal alkaloids:** anfeain, withanine, tropine, choline, anahygaine
✓ **Steroidal lactone:** withanolides, withafeuine, withefeuin-A, withanine

➢ *Compatibility of Ashwagandha and Triphala Together*

- Taiphala is a blend of three herbs: awala, hauitaki, and bibhitaki.
  All of these herbs are compatible with ashwagandha. All of the herbs in triphala—awala, hauitaki, and bibhitaki—are astringent and warm in nature. Ashwagandha is also straigent. All of the above herbs are rasayana or adaptogens. They aid in normalising all of the baby's functions. Additionally, they have the same antioxidant and antidiabetic effect.
- Moreover, these powder and liquid dose forms are compatible.
- Apart from these, no pharmacological interactions or herbal incompatibilities have been documented with any of these herbs.
- Ashwagandha and triphala together are an ideal combo, particularly for someone who suffers from debility and persistent constipation.
- Triphala and ashwagandha are both similar practices that have been shown to be beneficial for conditions like

✓ Chorea
✓ Cataract
✓ Dayeye
✓ Keratoconjuctive
✓ Trachoma
✓ Paineyestorelives

➢ *Quality Control Parameters Herbal Formulation*

- **Physical parameters**: these comprise the following: colour, appearance, smell, clarity, the viscosity moisture, content, acidity, hardness, flowing property, flocculation, sedimentation, and settling rate.
- **Chemical parameters:** these comprise colour, extractive values, heavy metal limit tests, chemical testing for active ingredients, etc.
- **Chromatographic of herbals:** GC, UV, TLC, HPLC, HPTLC, GCMS, and other techniques can be used for this type of study.

IV. MICROBIOLOGICAL PARAMETERS

It contains the total amount of viable material, the total number of mould, and the total number of enterobacteriaceae. morphology. One of the significant ayurvedic triphala churnas was standardised in the current investigation. Churnas are formulations made from finely ground medication powders, which might be simple or complex. Simple churna is caused by the fact that most substances have a significant boost in therapeutic value when reduced to a very fine stage of subdivision.

➢ *Triphala & Ashwagandha Churna and its Composition*

Emblica officinalis works well for treating dyspepsia, amlapitta, and hepatoxicity. In rats and rabbits, the fruits show anti-atherosclerotic and hypolipiadaemic properties. In certain strains of Salmoella typhimurium, the fruit extraction has anti-mutagenic efficacy against specific directly acting mutagens. Additionally, the alma extract possesses antibacterial qualities. Ashwagandha and amalaki are antioxidants that have the ability to scavenge free radicals. This might be brought on by elevated super oxide dismutase levels. It has been demonstrated that Terminalia bellirica lignin has anti-HIV, antimalarial, liver-protective, and anti-fungal properties. The pericarp of the fruit of Terminalia chebula exhibited antifungal, cardio tonic, and cytoprotective characteristics.

➢ *Anti Oxidant Activity of Triphala and Eye Health*

Triphala's antioxidant properties may be able to preserve eye health. Flavonoids and vitamin C abound in triphala. In one study, triphala was used as a pretreatment for mice with cataracts caused by selenite. Triphala considerably raised the glutathione content of the eye lenses. When compared to the control group, triphala also enhanced the activity of antioxidant enzymes in the lenses of the experimenters, including glutathione-S-transferase, catalase, superoxide dismutase, and glutathione peroxidase. Only 20% of the mice given triphala as a pretreatment developed cataracts, compared to 100% of the animals in the control group. The impact might be connected to triphala's antioxidant properties.

➢ *How Ayurveda Treats Cataracts?*

The primary objective of ayurvedic treatment for cataracts is to reduce the antagonized body energy that normalizes the blood flow and strengthens the nerves and tissues inside the eye.

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Ayurveda works only in the early stages of cataracts.

➢ *Ayurvedic Herbs for Cataracts*

Although very few, there are some herbs that can keep vatas intact and reduce the risk of cataracts developing or deteriorating of the condition. Take the following herbs or its supplements in the following dosage.

- Take 100g of almonds,100g of fennel seeds,100g coriander powder and10g of dark pepper and grind these into a powder. Mix these Powders to get her and keep it in a cool place. Take 1 teaspoon of this mixture with somes ugar before going to sleep.
- Mix1teaspoon of Triphala powder in1cup of boiling water .Drink this before going to bed.

➢ *Ayurvedic Medicines for Cataract*

Cataracts can impact the quality of life negatively as people get dependent on other people for even the simplest tasks. Although not directly, delaying the treatment can have psychological and social implications too. Ayurvedic doctors prescribe the following medicines to treat cataracts fast-

- *Mahatriphalaghrita*

The triphala helps to nourish as well as strength then eyes and tissues of the eyes whereas ghee stabilizes the aggravated vata. Therefore, this is the first medicine that doctors prescribe to get rid of cataracts.

- *Triphalachoorna*

This powdered mixture helps to remove harmful toxins from the body and reduce the vata dosha in the body. There are two applications of this mixture- washing the eyes as well as drinking it internally. To take this, mix 1 tablespoon of this mixture in a tumble of water and keep it covered for 12 hours.

- *Amla Saar*

The main component of this medicine is Indian Gooseberry or Amla juice. According to Ayurvedic specialists,this is the best ayurvedic medicine that can help in restoring vision considerably in cataract patents. The antioxidant properties of this medicine help to remove the harmful toxins from the body and thereby, improve eyesight. To take this medicine, mix this juice and water in equal parts twice a day after meals.

- *Biberry Capsules*

Derived from the herb Bilberry, these capsules are rich in antioxidants that enhances the overall blood circulation throughout the body. As the blood flow improves inside the eyes too , the eye sight improves. Moreover, this Medicine has minimal side effects which it makes more preferred by Ayurvedic doctors. Mix 2 capsules with milk or water after meals.

- *Chandrodayavarti*

Chandrodaya varti is recommended for treating severe stages of cataracts. The patient is asked to apply a mixture made out of this preparation for a couple of minutes on the eyes. When it is applied on the eyes , it stimulates circulation of blood and helps to dissolve the protein accumulation in the lenses.

- *Amalakirasayan*

Made up of Amla extract, the capsules are loaded with vitamin C which is an essential nutrient for eye health. Also, due to its anti-ageing effects, doctors prescribe this medicine to treat age-related cataracts.

➢ *Ayurvedic Tips to Prevent Cataract*

Not only treating cataracts, but Ayurveda also suggests some lifestyle tips following which the chances of cataracts developing can be reduced considerably. Some of these are explained-

- Include ghee in your daily diet.Take1teaspoon of ghee two times daily to keep the vascular system functioning.
- Avoid food items such as pickle ,strong tea, black coffee, sauce,etc, and other bitter and sour foods.
- Ayurvedic experts ask cataract patients to consume cow milk and dairy product regularly to prevent cataract from worsening.
- Eat fruits such as oranges, apples, pomegranates, bananas to get sufficient amount of vitamin C.
- Eat green leafy vegetables such as spinach, ladyfinger.
- Put fenugreek seeds while cooking meals.
- Smoking disbalances the pittados has of the body , heightening the vata negatively. Quit smoking to keep the pittados has in place.
- Add healthy vitamin E-rich foods like spinach, almonds, and sunflower seeds.
- To reduce aggravation of vatas, try to calm yourself and avoid excessive worrying and getting anxious.
- Stay away from harmful chemicals such as X-Rays, infrared rays.

➢ *How to Get Rid of Cataracts Permanently?*

Although ayurveda explains that some particular herbs and remedies can treat cataracts effectively, not a lot of people have been able to benefit from the same. Also, there is no substantial evidence that can confirm that Ayurvedic treatment of cataract can cure the problem effectively or permanently. Rather, people have complained of experiencing several side effects such as diarrhea, headache, worsening of eyesight, difficulty reading in the dark, etc. when they used ayurvedic medicines.

The sole curative option for cataracts is surgery if you're thinking about getting rid of them permanently. The process entails totally removing the damaged lens and replacing it with a new, transparent artificial lens, so the explanation is straightforward. With the latest modern procedures, eyesight is restored rapidly and the incision heals in a week or less. The treatment takes around 15 to 20 minutes to complete.

➢ *Diagnosis*

Your eye doctor will assess your symptoms and medical history to determine whether you have a cataract. They will also check your eyes. Your doctor could do a variety of tests, including:

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➢ *Vision Test*

The vision test, also known as a visual acuity exam, gauges your ability to read a set of letters using an eye chart. While another eye is covered, one eye is checked at a time. One uses a chart or viewing gadget with progressively smaller lettering. Your eye doctor uses this to assess if you're blessed with 20/20 vision or whether you have visual difficulties.

- *Eye Structure Exam*

Your eye doctor can examine the structures in front of the eye up close with an eye structural exam, often known as a slit lamp exam. The reason it's called a slit lamp is that it illuminates the framework in your eye with a strong line of light, or slit. Your doctor can see little parts of these structures via the incision. This facilitates the process of identifying potential issues.

- *Retinal Exam.*

The retina, or back of the eye, is examined during a retinal exam. Your eye doctor will dilate (open up the pupils) your eyes with drops in order to prepare you for a retinal test. This improves retinal visibility. Your optometrist can check your lens for indications of a cataract using an ophthalmoscope or a slit lamp.

- *Fluid Pressure Test.*

This test gauges the fluid pressure in the eye and is also known as applanation tonometry. To achieve this, a variety of gadgets are available.

➢ *When to Consider Cataract Surgery*

To determine if surgery is the right option for you, speak with your eye doctor. Most eye doctors recommend that you consider getting cataract surgery when your cataracts begin to interfere with your quality of life. This might include your ability to read and drive at night, among other everyday chores.

Since most cataracts don't cause vision problems, most individuals don't feel the need to get them removed right away. However, some people's cataracts might deteriorate more quickly than others. These consist of obesity, high blood pressure, and diabetes.

The recovery of your vision from cataract surgery is usually unaffected by waiting to have it done. Talk with your doctor about the advantages and disadvantages of cataract surgery.

In the event that you decide against having cataract surgery right away, your eye doctor could advise routine follow-up examinations to monitor the progression of your cataracts. Your circumstances will determine how frequently you see your eye doctor.

➢ *Anti-Cataract-*

Anti-cataract drugs encompass a range of pharmacological strategies aimed at preventing and treating cataracts. These drugs target various mechanisms involved in cataract development.

Aldose reductase inhibitors, non-steroidal anti-inflammatory medications, substances that operate on glutathione, vitamins, minerals, antioxidants, and herbal remedies are a few prominent classes of anti-cataract medications.

Furthermore, medications such as aspirin, sulindac, and naproxen drops for eyes have demonstrated effectiveness in postponing the development and advancement of cataracts without causing unfavourable side effects.

Bendazac, a compound with radical scavenging properties, and its derivatives have demonstrated potential as anti-cataract agents by protecting lens proteins from denaturation

Moreover, recent advancements have introduced novel pharmacological substances like 25-hydroxycholesterol and lanosterol, which can reverselens opacity by dissolving protein aggregates, offering promising avenuesfor cataract treatment

Research is ongoing to identify drugs associated with cataract formation, with over 70 drugs linked to an increased risk of cataracts, categorized based on the strength of evidence supporting their association with cataract formation. These drugs are classified into known, probable, possible, and uncertain categories, shedding light on specific prescription drugs that may contribute to the burden of cataract formation. For instance, psychotropic drugs dominate the category of drugs with a possible association with cataracts, highlighting the need to understand the molecular mechanisms underlying drug-induced cataract formation.

Exciting developments in drug treatments for cataracts include the exploration of oxysterol compounds like VP1-001, which have shown promising results in restoring lens protein organization and reducing lens opacity,potentiallyofferinganon-surgicalapproachtotreatingcataracts.This research signifies a significant step towards developing medications that can address specific types of cataracts, emphasizing the importance of tailoring treatments to different cataract profiles for optimal efficacy.

In summary, anti-cataract drugs encompass a diverse array of pharmacological interventions targeting various pathways involved in cataract development, ranging from traditional agents like aldose reductase inhibitors to novel substances like oxysterol compounds, offering hope for improved prevention and treatment of this common cause of vision impairment.

➢ *Anti-Cataract Drugs*

- Aspirin
- Diclofenac Sodium Ophthalmic Solution
- Nepafenac Ophthalmic
- Aldose reductase inhibitors
- Non-steroidal anti-inflammatory drugs (NSAIDs) like

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sulindac and naproxen eye drops
- Agents acting on glutathione
- Vitamins, minerals and antioxidants2
- Herbal drugs
- Bendazacanditsderivativeslike5-hydroxybendazacand bendazac-lysine
- Lanosteroland25-hydroxycholesterolcompoundslikeVP1- 0014
- Metformin , resveratrol , and curcumin

✓ Active Ingredients In Anti-Cataract Drugs

The active ingredients in anti-cataract drugs can vary depending on the specific medication. Some common active ingredients found in anti- cataract drugs include:

- Prednisoloneacetate1%
- Dexamethasone0.1%
- Bendazac
- Sulindac
- Naproxen
- N-acetylcystein
- Glutathione ethyl ester
- Acetyl-l-carnitine
- Piperine
- Caffeicacid phenethyl ester Aspirin
- Metformin
- Resveratrol
- Curcumin

These active ingredients play a role in targeting different pathways involved in cataract development, such as reducing oxidative stress, inhibiting aldose reductase, and protecting lens proteins from denaturation.

➢ *Mechanism of Action of Anti-Cataract Drugs :-*

The mechanism of action of anti-cataract drugs involves targeting various pathways and factors involved in cataract development. Some key mechanisms include:

- *Inhibition of Aldose Reductase (AR):*

An enzyme called aldose reducer is a part of the polyol pathway, which turns glucose into sorbitol. Aldose reductase inhibitors specifically target this enzyme. One possible method of preventing cataract development is to inhibit this enzyme.

- *Reduction of Oxidative Stress:*

Oxidative stress is a significant factor in cataract development. Anti-cataract drugs may contain antioxidants, vitamins, and minerals that help reduce oxidative damage to the lens proteins, thereby preventing or slowing down cataract formation.

- *Dissolution of Crystallin Aggregates:*

Compounds like lanosterol (25-hydroxycholesterol) have been found to increase chaperone activity, leading to the dissolution of crystallin aggregates in the lens. This mechanism helps in reversing lens opacity, offering a potential treatment for cataracts.

- *Inhibition of Quinones:*

Quinones have a role in oxidative stress and can react with enzymes and lens proteins to create cataracts. In order to avoid protein aggregation and preserve lens clarity, anti-cataract medications such as Catalin (pirenoxine) competitively block the sulfhydryl combination of the quinoid compounds with lens proteins.

- *Prevention of Protein Aggregation:*

Novel pharmaceutical compounds, including as derivatives of lanosterol, have demonstrated the capacity to reverse lens opacity via dissolving the crystallin protein aggregation. This method suggests that protein aggregating is not a final state and that some small-molecule medications can reverse it, opening up new therapeutic options for cataracts.

These mechanisms collectively target different aspects of cataract formation, from inhibiting specific enzymes and pathways to reducing oxidative damage and preventing protein aggregation in the lens, ultimately aiming to prevent, delay, or reverse cataract development.

➢ *How to Make Triphala Eye Wash Solutions: Ingredients:*

- 1teaspoon power (Churna) 1 cup water
- Take a teaspoon organic triphala power

- Mix it hot, boiling water. The heat will help the powder dissolve and will activate the compound in triphala.

➢ *How to Use Churna for Eye Care:*

Fig 12: How to Use Churna for Eye Care

You may strengthen and enhance the health of your eyes by creating a basic eyewash with triphala at home. To do this, you have to:

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- Take a teaspoon of organic Triphala powder.
- Mix it with hot, boiling water. The heat will help the powder dissolve and will activate the compounds in Triphala.
- Allow the mixture to cool until it is comfortable to touch.
- Strain the mixture through a fine cloth. This will help you remove any particles that might hurt your eyes.
- Take clean cloth or towel and dip it in the mixture.
- Le down and place the wet towel over your eyes
- Keep blinking so that your eyes can touch to the Triphala Eyewash
- Do this for atleast 5 minutes
- Avoid any strain to your eyes after using the eye wash .The best time to do this is right before you sleep so that your eyes receive sample rest and relaxation.

V. CONCLUSION

Strong poly herbal blend triphala has several effective medicinal applications for preserving homeostasis and treating and preventing illness. Numerous scientific investigations have shown evidence-based confirmation of diverse customary use of triphala. It has therapeutic benefits for a variety of diseases. For further and continuing research to confirm its therapeutic applications in clinical trials on humans and to identify the molecular pathways pertinent to this plant-based medication, more government funding allocation and support are required. To raise knowledge of clinical Ayurvedic treatments and alternative treatments like triphala, more public and medical professional education is needed. This will benefit both sick and population health.

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