A brief review on: Ayurvedic formulation of Triphala churna

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Abstract - Battle of microbe’s vs immunity. It is a great challenging task to prevent infections and suppress the further consequences with suitable therapeutic compounds. In present scenario synthetic analogues were existing for treatments of various ailments. Whereas drastic tragedies and exhibiting of untoward effects are leads sever effects on genomic structural alteration followed by defect in few genes. This will long standing alteration in immunity. These facts were really a challenging task for scientists and clinicians. To avoid all these consequences, we focused on plant derived bio compounds, with respect to a brief review on: Ayurvedic formulation of Triphala churna.

Key words: Triphala churna, Antioxidant, DPPH, Antimicrobial.

Introduction
Indian traditional herbal medicine has a long history. One of the most well-known and effective medicines is triphala, which is accessible in the Indian medical pharmacopoeia as a "churna," a finely sieved powder used as a source of medicinal substance to treat a variety of illnesses [8]. One of the oldest medical systems, ayurveda takes a holistic approach to health and personal care. Triphala is a multi-herbal Ayurvedic remedy that comprises the fruits of three different plants, hence the name "tri-phala" Emblica officinalis (Amalaki), Terminalia bellerica (Bibhitaki), and Terminalia chebula (Haritaki) are the plant species that make up this herbal mixture. These substances are antimicrobial and have been proved the digestive system in a positive way. In addition, the fruits used to make triphala have antioxidant and free radical scavenging properties [1]. The genus name terminalia alludes to the habit of the leaves being crowded or carried on the tips of the shoots and is derived from the Latin word Terminus or Terminalis [2]. Triphala is given in a variety of forms, including powder, decoction, oil, and formulations based on ghee. In Ayurveda, triphala is regarded as a good remedy since it helps healthy folks rejuvenate and live longer. It is possible to live for 100 years without illness or ageing by drinking Triphala daily with honey and ghee, according to the Charka Samhita, the primary genuine text of Ayurveda. Amla often known as "Indiangooseberry" Herbal medicines are increasingly being used as dietary supplements to avoid the majority of health infections [8]. Oral treatment of Triphala extract (100mg/kg body weight) effectively lowered blood sugar levels in normal and alloxan-induced (120mg/kg) diabetic rats within 4 hours. Triphala treatment on a regular basis produced a long-term anti-diabetic benefit in humans [12]. Herbal medications are drugs derived from plants that are used to achieve or maintain good health and to treat ailments. For thousands of years, it has been known that plant extracts have therapeutic characteristics, and it has been discovered that natural plant extracts can be utilized as effective endodontic irritant. [3]

Using triphala extract in a collagen sponge as an antibacterial and wound-healing agent, researchers reported a considerable increase in the pace of wound closure and a significant decrease in the number of bacteria present in the infected wounds.[6] Worldwide, there are about five billion cases of dental caries. [9] The production of dental plaque has been reduced by using a mouthwash made from triphala [7].

Figure 01: Triphala churna [11]  
Figure 02: Amla, Behda, Hirda fruits [11]
Table 01: Regional names of ingredients of Triphala churna [2]

<table>
<thead>
<tr>
<th>Emblica officinalis</th>
<th>Terminalia chebula</th>
<th>Terminalia bellerica</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gujarati: Ambala, Amala</td>
<td>Gujarati: Hirdo, Himaja, Puloharda</td>
<td>Gujarati: Bahedan</td>
</tr>
<tr>
<td>Hindi: Amla</td>
<td>Hindi: Harre, Harad, Harar.</td>
<td>Hindi: Bahera</td>
</tr>
<tr>
<td>Kannada: Nellikayi, Bela nelli</td>
<td>Kannada: Alabekai</td>
<td>Kannada: Tare kai, Shanti kai.</td>
</tr>
<tr>
<td>Oriya: Ainla, Amla</td>
<td>Oriya: Harida</td>
<td>Oriya: Baheda</td>
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<tr>
<td>Telugu: Ursika</td>
<td>Telugu: Karaka.</td>
<td>Telugu: Thanikkaya</td>
</tr>
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</table>

**Figure 03: Triphala churna**

**Phytoconstituents of Triphala:**
Emblicanin-A and emblicanin-B, tannins, gallic acid, pyrogallol, and pectin in addition to having high levels of vitamin C, phenolic acid, flavonoids, syringic acid, Epicatechin along with ascorbic acid [2]. Chebulic acid, gallotanic acid, resin [12]. Saponins, Anthraquinones, Amino acid, fatty acid, ellagic acid and various carbohydrates [10].
Pharmacological Effects:
Numerous experimental studies have demonstrated the antioxidant, hepatoprotective, hypocholesterolaemia, anti-inflammatory, and gastroprotective properties of amla fruit. Terminalia chebula is a powerful antibacterial, antiviral, anticancer, antimutagenic, and anaphylaxis-inhibiting substance. The laxative and anthelmintic plant Terminalia bellerica. These substances are thought to be the source of certain pharmacological effects, including those that are antimicrobial, antioxidant, anti-Salmonella, hepatoprotective, antispasmodic, and bronchodilator [2]. Appetite stimulation, Antifungal, Antimalarial, Antiallergic, Antipyretic, Analgesic, Adaptogenic, Immunomodulating [5], Hypoglycaemic [13]. Additionally, triphala may support healthy digestion and absorption of food, lower serum cholesterol levels, raise red blood cell and haemoglobin synthesis, enhance circulation, relax bile ducts, prevent immunosenescence, and maintain the equilibrium of the endocrine system [10]. Triphala improves eyesight [17]. Potential to lower stress.[4]
Commercial applications for triphala include toothpaste, mouthwash, and ointments [8].

Materials and Methods:
Collection of raw materials:
Drugs such as Emblica officinalis, Terminalia chebulic, and Terminalia bellerica were obtained from reliable sources and verified by the Pharmacognosy department.
Preparation of extract:
Emblica officinalis, Terminalia bellerica, and Terminalia chebula's deseeded fruits were gathered individually, properly washed, and dried. Remove all foreign and earthy stuff, then let it dry in the shade. After that, the medicines were pulverised to create an abrasive powder [16]
Agar well diffusion method:
To assess the antibacterial activity of plant or microbial extracts, the agar well diffusion method is frequently utilised [14].
Agar disc diffusion method:
This procedure was being tested for antibiotic susceptibility. Gentamycin and ampicillin antibiotic discs with a 10mcg/disc concentration were aseptically placed on the sterile MHA plates lawn cultured with each test organism. Using a ruler, the zone of inhibition was measured and marked in millimetres [16].

![Figure no 04](A)Agar disc diffusion (B)Agar well diffusion (C)Agar plug diffusion

Minimum inhibitory concentration
The microbroth dilution method was used for MIC. The different triphala concentrations were made by combining extracts with distilled water. Equal amounts of each extract's varied concentrations were combined in microtubes to create a solution that contained up to 0.5ml. the tube was incubated for 24 hours at 37 degrees to look for activity [5].
Antioxidant activity of Triphala:
Triphala's antioxidant and radioprotective properties result from its polyphenols, which lower oxidative stress by creating nonreactive compounds from reactive oxygen free radicals [2]. The two extracts' capacity to scavenge free radicals was evaluated using the DPPH antioxidant test. For this test, DPPH (5 mg) was dissolved in 100 ml of methanol before being combined in the same amount with AE1 and AE2 in phosphate buffer (pH 7.4). This concoction was properly mixed and then left in the dark for 20 minutes. In both the presence and absence of various extract quantities, the absorbance at 517 nm was observed. The benchmark used was ascorbic acid. In 10.00 ml of water, ascorbic acid was measured and dissolved. Water was used as the solvent to create a series of ascorbic acid solutions with concentrations of 0.02 mg/ml, 0.06 mg/ml, 0.10 mg/ml, 0.16 mg/ml, 0.24 mg/ml, and 0.32 mg/ml. [12]

\[
\text{DPPH scavenging activity } \% = \frac{\text{dc} - \text{dt}}{\text{dc}} \times 100
\]

Where,
\(\text{dc}\) is the control sample's absorbance at 517 nm.
\(\text{dt}\) is the test sample's absorbance at 517 nm [12].

Conclusion:
The powerful polyherbal mixture triphala has a wide range of therapeutic applications for preserving immunity as well as the prevention and treatment of disease. Numerous studies have shown evidence-based confirmation of triphala's many traditional applications. Consequently, it is crucial to do study to identify the sources of natural antioxidants and antibacterials [13]. The antioxidant and antimicrobial results were currently the best measure available to reflect an antibiotic's potency against particular bacterial strains. Despite the standardisation of recognised procedures, it should be noted that the actual antioxidant and antimicrobial results may vary by a factor of two diluting the result of the study. Typically, this difference has no bearing on clinical interpretation; nonetheless, Significance: first, to determine whether the strain is susceptible or resistant; and second, to make the best treatment decision possible considering PK/PD factors using this value [15]. Antioxidants are substances that may prevent intracellular molecules from oxidizing, shielding the organism from the damaging effects of free radicals. Triphala contains three compounds that are antioxidant when used a, property, and became more powerful compound. Triphala's several effects make it utilized in countless illnesses. extracting methanol from Triphala has demonstrated strong antioxidant activity in in vitro tests.[2]
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