COMPARATIVE ANTHELMINTIC ACTIVITY OF EUGENIA CARYOPHYLLUS & UNCARIA GAMBIER

*Manisha Yogesh Sonalkar, Sachin Annasaheb Nitave

Dr.J.J.Magdum Trust’s Anil Alias Pintu Magdum Memorial Pharmacy College, Dharangutti,
Maharashtra, India

ABSTRACT
The present study evaluated the anthelmintic activity of alcoholic extract of Eugenia caryophyllus & Uncaria gambier by using pheritima posthuma as a test worms. Both test sample taken at different concentration clove bud extract having (5,10,15mg/ml conc.) & pale catechu having (50.100,150mg/ml conc.) were tested on indian earth worms (pheritima posthuma),paralysis time & death of time were consider as assessment of anthelmintic activity. The albendazole 20mg/ml & normal saline solution were used as a standard & control respectively. The phytochemical testing of clove bud & pale catechu done & it showed that clove bud contain Flavonoid, Saponin, Alkaloid, Tannin & pale catechu contain Tannin & Flavonoid. It was noticed in this investigation that the time of paralysis & death of worms was the dose dependent & it was much earlier in case of eugenia caryophyulus than in gambier catechu.

Key Words:- Eugenia Caryophylata, Uncaria Gambier, Helminthes.

INTRODUCTION
The anthelmintic drugs show their effects on the human body and their regular activities by causing helminthiasis which is a very severe parasitic disease. Mostly population and the stock parasites produce the resistance against the helminths parasites which causes morbidity and mortality.1.Antihelminthics or anthelmintics are drugs that expel parasitic worms (helminthes) from the body by killing them. It also called Vermifuges (stunning) or Vermicides (Killing).2
• **Clove Plant (Eugenia caryophyllus)**
  - Kingdom: Plantae
  - Phylum: Angiosperms
  - Order: Myrtales
  - Family: Myrtaceae
  - Genus: Syzygium

Clove is the dried flower buds of an aromatic tree. Cloves are now harvested primarily in Indonesia, Madagascar, Pakistan, Sri Lanka, and in India. Clove is a long-lived evergreen plant with rosy pink buds which become fragrant red flowers and purple fruit. Clove mainly contain Sesquiterpenes, Volatile oil i.e. eugenol 81.1%, caryophyllin, tannins & gum. Clove oil mainly used as – Analgesic Antibacterial, Anticonvulsant, Anticoagulant, Antifungal, Anti-infectious, Anti-inflammatory, Antioxidant, Antiparasitic, Strong Antiseptic, Antitumor, Antiviral, Disinfectant, Immune stimulant, Dental Analgesic, Carminative. The main compound of clove is eugenol which is used as an antiseptic, antibacterial, analgesic.

• **Pale Catechu (Uncaria gambier)**: Family: Rubiaceae

Pale Catechu is a climbing shrub. Native to south-eastern Asia (particularly Singapore) it has small fragrant flowers. Pale catechu is one of the plants that can be mixed with betel nut to make a chewing gum. Medicinally it is used as dysentery and diarrhoea. Pale Catechu is also known as Kathha. It is an Asian herbal plant, obtained as a dried aqueous extract of leaves & young twig of shrub, Uncaria gambier. It mainly contain tannins i.e. catechutannic acid, acacia catechin, catechu red, catechin, epicatechin & flavonoids- quercitin & quercitrin. This drug mainly used as traditional medicine for wounds & ulcers, fevers, headaches, gastrointestinal illnesses & bacterial & fungal infection. It used as an astringent medicine for the treatment of gums, toothache, diarrhea & sore throat.

**MATERIALS & METHODS**

**Plant Materials:** The *Eugenia caryophyllus* & *Uncaria gambier roxb*. Were collected from District Sangli, India 416416 in month of April 2014 & it was identified & authenticated by Dr. Miss. K.R. Datar, Head Dept. of Botany, Deccan Education Society, Pune Willingdon college, Sangli.
Preparation of Extract:- Dried Clove Bud were grinded to fine powder(25gm) and mixed with 100 ml of Absolute Alcohol & extracted by using Soxhlet apparatus for 24hrs. The filtrate extract was then evaporated at 60⁰c & stored at 40⁰c until further process.

Pale Catechu was coarsely powder(25gm) and mixed with 100ml of Absolute Alcohol & extracted by using Soxhlet apparatus for 24 hrs.. The filtrate of extract was then evaporated at 60⁰c & stored at 40⁰c until further process.

Preliminary Phytochemical Analysis:

Table No:1

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Chemical Classes</th>
<th>Test</th>
<th>Alcoholic Extract Of Clove</th>
<th>Alcoholic Extract Of Pale Catechu</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Flavonoids</td>
<td>Lead Acetate</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>2.</td>
<td>Tannin</td>
<td>Ferric Chloride</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>3.</td>
<td>Saponins</td>
<td>Frothing Test</td>
<td>Positive</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Alkaloid</td>
<td>Dragendroff’S</td>
<td>Positive</td>
<td>-</td>
</tr>
</tbody>
</table>

Collection of Worms

Indian adult earthworms Pheretima posthuma were collected from Jaysingpur,India. The average size of earthworms being 7-9 cm prior to experiment. They were wash with water for removal of dirt.

Evaluation of Anthelmintic Activity

The assay was performed invitro using adult earthworm i.e. pheretima posthuma for evaluation of anthelmintic activity. First Prepared extract diluted in distilled water in different concentration i.e.Clove extract sample were prepared at concentration 5mg/ml, 10mg/ml, 15mg/ml.

Pale catechu extract diluted in concentration 50mg/ml, 100mg/ml, 150mg/ml. Albendazole(20mg/ml) was used as a standard & Normal saline solution used as a control.

All dilution taken 40ml in petridish, & added worms in that petridish, & observe the time taken for paralysis & death of intestinal roundworms. The time of paralysis noticed when there were less or no movement of worm & death time noticed when there were stop movement of worm after shaking. The result shown in table no. 1.
Observation Table

Table No. 2 : Anthelmintic Activity Of Alcoholic Extract of Clove and Pale catechu

<table>
<thead>
<tr>
<th>Test Drug</th>
<th>Conc. (mg/ml)</th>
<th>Paralysis Time (min.)</th>
<th>Death Time (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcoholic Extract of Clove</td>
<td>5</td>
<td>4.5±0.2236</td>
<td>22.83±0.6009</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>2.5±0.2236</td>
<td>11.5±0.7638</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>1.5±0.2236</td>
<td>9.5±0.7638</td>
</tr>
<tr>
<td>Alcoholic Extract of pale Catechu</td>
<td>50</td>
<td>4.83±0.3073</td>
<td>87.16±0.7032</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>3.66±0.3333</td>
<td>73±0.9661</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td>2.5±0.2236</td>
<td>62.5±0.7638</td>
</tr>
<tr>
<td>Normal Saline Solution</td>
<td>---</td>
<td>46.5±0.4282</td>
<td>122.83±0.6009</td>
</tr>
<tr>
<td>Albendazole (S)</td>
<td>20</td>
<td>2.66±0.3333</td>
<td>4.66±0.3333</td>
</tr>
</tbody>
</table>

Fig No 3 : Anthelmintic activity of Alcoholic Extract of Clove, Standard drug and Control
RESULT & DISCUSSION
The result obtained in present investigation is indicating that the clove bud & pale catechu extract showing dose dependent response i.e. from loss of motility to death of worms. In case of test sample of clove bud 15mg/ml conc. showed Paralysis at 1.5 mins. and death occured within 9.5 mins. In case of pale catechu test sample 150mg/ml conc. paralysis occurred at 2.5 mins. and death occured within 62.5 mins. So these all finding shown that alcoholic test sample showed significant anthelmintic activity in a dose dependent manner. At higher concentration showed haemorrhagic spot on the body of the worms. The comparative evaluation of both drugs shows that Clove has potent anthelmintic activity as compared to Pale catechu.

CONCLUSION
In this present investigation it is concluded that alcoholic extract of crude clove bud is having more potent activity against pheritima posthuma worms than alcoholic extract of pale catechu.

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