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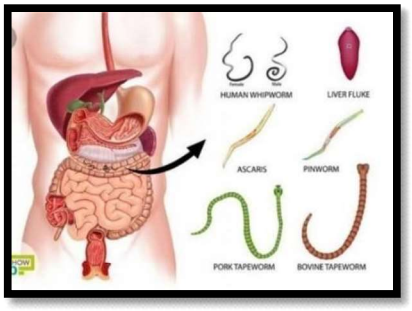
"A REVIEW: ANTHELMINTIC ACTIVITY OF AQUEOUS EXTRACTOF MANGIFERAINDICALEAF AND STONE"

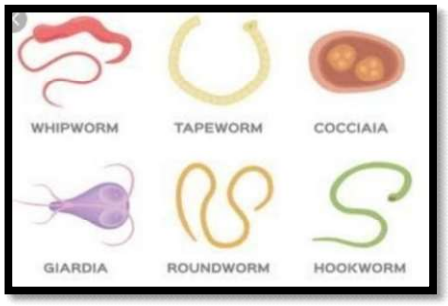
Dadas Ramesh Gorakh, Miss. Shalagaonkar A.P.

Department of pharmaceutics, Late NarayandasBhavandasChhabada Institute of pharmacy,Raigaon, Satara, Shivajiuniversity, kolhapur Maharashtra, India Telephone no: + 919665721871, Gmail: rameshdadas192@gmail.com
LN.B.CI.O.P Raigaon, Satara.

Introduction:

Helminthes infections are amongthe most widespread infectionsin humans, distressing ahuge populationof the world. The disease iscaused byround worm, hookworm, threadworm,tapewormandfilarial,guineawormarefoundinintestine[1].Althoughthemajority ofinfectionsduetohelminthesare generallyrestrictedto tropical regions andcause enormous hazard to health and contribute to the prevalence of undernourishment,anaemia, eosinophilia andpneumonia.Parasiticdiseasescauseruthlessmorbidityaffectingprincipally population in endemic areas. The worm is responsible formany type ofdisease; theyharm thehostbydepriving of food, causing blood loss in stool, injury toorgans, intestinalorlymphaticobstructionandbysecretingthetoxins[2]. Helminthiasisis reallyfatal, butitisamajorcauseofillhealth[3].





Treatment with an antihelminthic drug kills worms whose genotype renders them susceptibleto the drug. Worms that are resistant survive and pass on their "resistance" genes. Resistantworms accumulate and finally treatment failure occurs. Intestinal worm infections in generalare more easily treated thanthoseinother locationsin the body [9] Developmentofresistancetomostofthecommerciallyavailableanthelminticsbecame a severe problemworldwide. Because the worms need not be killed by the drugandthedrugneednotbeabsorbed when given by mouth, there is usually a wider margin of safety than with drugs forworminfectionsin other sites. Indiscriminate use of synthetic anthelmintics can lead toresistance ofparasites.[10]Herbaldrugs have been in use since ancient times for thetreatmentofparasiticdiseasesinhumanandcouldbeofvalueinpreventingthedevelopmentof resistance.[11]Moreover, synthetic drugs are unaffordable, inaccessible or inadequatelyavailable to the resource-poor farmers of the developing countries[12]. Thesefactorsgivetheway for the herbal formulation as alternative anthelmintics. Inthe currentstudy,wehave attempted toinvestigatethe anthelmintic activity of aqueous extract ofMangiferaindicaleafandstoneonIndianearthworms(Pheretimaposthuma).

Literature Survey Introduction:-

Mango (Mangiferaindica L.) is a juicy stone fruit belongs to the family of Anacardiaceae inthe order of Sapindales and is grown in many parts of the world, particularly in tropicalcountries. It is the national fruit of India and Philippines and the national tree of Bangladesh.Over1000 mangovarietiesareavailableworldwide.Oftheavailablevarieties,onlyafewaregrown on commercial scales and traded. Mango is now commercially grown in more than 87countries. Currently, mango is cultivated on an area of approximately 3.7 million hactorworldwide. Mango fruit conquers the 2nd position as a tropical crop, behind only bananas interms of production and acreage used. It has been well documented that mango fruits are animportant source of micronutrients, vitamins and other phytochemicals. Moreover, mangofruits provide energy, dietary fiber, carbohydrates, proteins, fats and phenolic compounds,whichare vitaltonormalhumangrowth,developmentandhealth.

Commonnames

ThecommonnamesofMangiferaindicainclude:

- Arab: Mabaz
- Bengali:Am(Um)
- Chinese: Miwang
- Danish:Mango,Mangofrugt,Mangotrae
- Dutch:Manga,Mangga,Manja,Mangoestanboom
- English:Mang
- Finnish:Mango, Mangopuu
- French:Mangue,Manguier
- German:IndischerMangobaum,Mango
- Greek:Magko,Mangko
- Hindi:Am,Ambi,Amia
- Japanese:Anchaa, Mangoo,Mangou
- Persian: Amb
- Sanskrit:Aamra,Ambrah
- Sinhalese:Amba
- Tamil:Mangas,Mau,Mampalam

Taxonomical Classification

- Kingdom:Plantae
- Subkingdom:Tracheobionta Superdivision:Spermatophyta Division:Magnoliophyt
- Class:Magnoliopsida Subclass:Rosidae Order: Sapindales
- Family:Anacardiaceae Genus: Mangifera
- Species:M.indica

Plantdescription:

- Sizeoftree: Mediumto large Height:10-40m
- Roundedcanopyrangefromlowanddensetouprightandopen.
- Bark:Darkgreybrowntoblack,superficiallycrackedpeelingofinirregular Root:Longunbranchedtaprootupto6-8m
- Leaves : Alternately arranged, 15-45cm length, petiole length 1-2 cm, upper surface-shiningandcolour-Darkgreen
- Flowers: Hermaphrodite and male flowers produced same panicle, size- 6-8mm indiameter.
- pollengrains-variableshapeandsize-20-35micron.
- Fruit:Compressed,fleshydrupe, variessize,shape,presenceoffiber, flavourand taste.

Ethnomedicinaluses:

Variouspartsofmangoareused formorethanthousandsofyearsaswidevarietyofethnomedicinaluse

Rootsand Bark: Used asastringent,acrid,refrigerant,styptic,anti-syphilitic,vulnerary, anti-emetic, antiinflammatory and constipating. They are useful in vitiatedconditions of pitta, metrorrhagia, calonorrhagia, pneumorrhagia, lecorrhoea, syphilis, uteritis,wounds, ulcers and vomiting. The juice of fresh bark has a marked action on mucousmembranes,inmenorrhoea,leucorrhoca,bleedingpilesanddiarrhoea.

Leaves:Usedasastringent,refrigerantstyptic, vulneraryandconstipating.Theyarealso useful in vitiated conditions of cough, hiccup, hyperdipsia, burning sensation,hemorrhages,haemoptysis,haemorrhoids,wounds,ulcers,diarrhoea,dysentery,pharyngopathy,scorpionstringandstomachopathy.

The ash of burnt leaves are useful in burns and scalds. The smokefromburningleavesisinhaledforreliefofthroatdiseases.

Flowers: Used as astringent, refrigerant, styptic, vulnerary, constipating andhaematinic. The dried flowers are useful in vitiated conditions of pitta, haemorrhages,haemoptysis,wounds,ulcers,anorexia,dyspepsia,uroedemagleet,catarrhofbladder,diarrhoea,chronicdysenteryandanemia.

Fruits:Theunripefruitsareacidic,acrid,antiscorbutic,refrigerant,digestiveandcarminative.Theyare usefulindysenteryophthalmia,eruptions,urethrorrhoea and

vaginopathy. The ripe fruits are refrigerant, sweet, emollient, laxative, cardiotonic,haemostatic, aphrodisiac, and tonic. They are also used in vitiated conditions vata and pitta,anorexia, dyspepsia, cardiopathy, haemoptysis, haemorrhages from uterus, lungs andintestine,emaciation,andanemia.

Stone: The seed kernel in rich source of protein (8.5%) and gallic acid. It is sweet,acrid, astringent, refrigerant, anthelmintic, constipating, haemostatic, vulnerary and uterinetonic. It is useful in vitiated conditions of pitta and cough, helminthiasis, chronic diarrhea,dysentery, haemorrhages, haemoptysis,haemorrhoids, ulcers, bruises,leucorrhoea,menorrhagia,diabetes,heatburnandvomiting.

NutrientandPhytochemicals:

Theenergyvalueper100g(3.5oz)is250 kJ(60 kcal) and thatoftheapplemangoisslightlyhigher(79kcalper 100g).
Mangocontainsavarietyofphytochemicalsandnutrients

Mango peel and pulp contain other compounds, such as pigment carotenoids andpolyphenols,andomega-3and-6polyunsaturatedfattyacids.

Mango peel pigments have biological effects, including carotenoids, such as theprovitamin A compound, beta-carotene, lutein and alphacarotene, polyphenols, such asquercetin, kaempferol, gallic acid, caffeic acid, catechins, tannins and the unique mangoxanthonoid,mangiferinwhichareunder preliminaryresearchfortheirpotentialtocounteractvariousdiseaseprocesses.

Phytochemicalandnutrientcontentappearstovaryacrossmango cultivars.

Upto25differentcarotenoidshavebeenisolatedfrommangopulp, the densestofwhichwasbeta-carotene,whichaccountsfortheyellow-orangepigmentationofmostmangoccultivar.

Pharmacologicaluses:

- Anticanceractivity:
- Antidiabeticactivity:
- Anti-inflammatory activity:
- Hepatoprotectiveactivity: Anti-hemorrhagicactivity: Anti-tetanusactivity:
- AnalgesicandAntipyreticactivity: Kidneydamage activity:
- Anti-ulceractivity: Lipidprofileactivity:
- Antiboneresorptionactivity: Anti-diarrhealactivity:
- Antibacterialactivity:

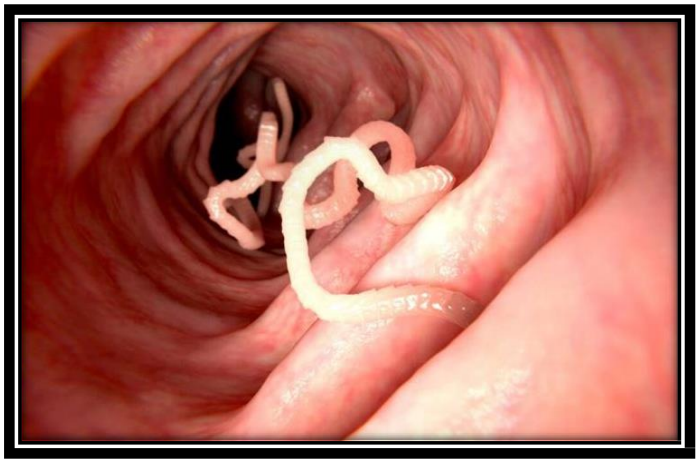
Pharmacologicaluses:

- Antifungalactivity:
- Antiviralactivity:
- Anti-amoebicactivity:

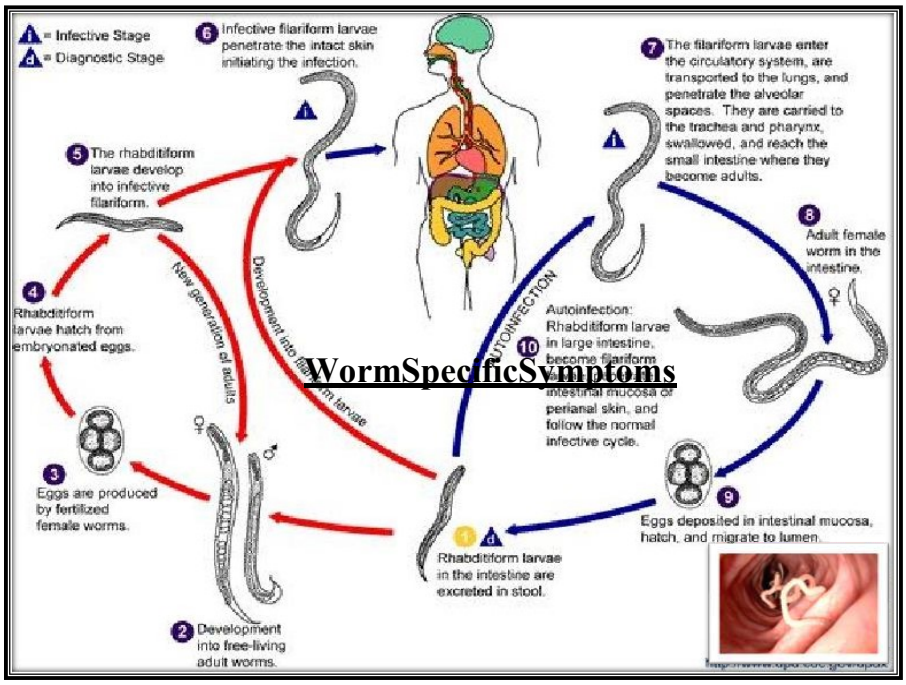
- Anthelminticactivity:
- Antimalarialactivity:
- Radioprotectiveactivity:
- Immunoregulationactivity:
- Cardioprotectiveactivity:
- Osteoporosisprevention:
- Recognitionofmemory:
- Bronchodilatoryactivity:
- Laxative activity:

Worm Infestation:

- Warm Infestation are long term disease that produce few symptoms in their early stagesand sometimesseriouseffectsat welldevelopedstagesormaybe quitefatalattimes.
- Causativeagent:
- Round worm: Pin worm, Hook wormFlatworms:Tape worm
- Flukes:Liver fluke



Life Cycle of Worms



WormSpecificSymptoms

CONCLUSION:

Using the PheretimaPosthuma as the animal models, we have shown that (aqueousextract) crude leaves and stone powder of Mangiferaindica has potential to act againsthelminthiasis. Moreover,theextentofanthelminticeffectoftheleavesandstonepowderiscomparable to that of standard drug, Albendazole being used against helminthiasis, ingeneral. This observation unambiguously suggests that the leaves and stone powder ofMangiferaindica must contain lead compounds that may provide profound implications ondesigningdenovoanthelminticdrugs.

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