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Evaluation of Anthelmenthic Activity & Phytochemical Screening of the Peels of *Citrussinensis* & Rhizomes of *Curcumalonga*

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ABSTRACT

Phytochemicals are secondary metabolites produced by all plants in which some have medicinal uses. The phytochemical analysis of peel & rhizome extracts in aqueous, ethanol, acetone, hexane, and chloroform extracts of indigenous medicinally important plants of citrussinensis (peels) & curcumalonga (dried rhizomes) were investigated. The phyto chemical analysis revealed the presence of active constituents such as carbohydrates, flavonoids, alkaloids, terpenes, phytosterols, tannins, steroids, saponins, glycosides, phenols, and anthraquinones. This research supports the local use of the peel and rhizome extracts of orange and turmeric to show the potent nature of the sealants when using din combination to treat helminthiasis. These plants belong to family rutaceae & zingiberaceae respectively. The present study provides evidence that the solvent extract of citrussinensis and curcumin along contains medicinally important bioactive compounds and this just if is the use of these plants in combination to treat helminthiasis & control mode growth in intestines.

Key words:
Phyto chemical screening, Indigenous,Citrussinensis, Curcumalonga,peelextract,rhizomeextract.

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INTRODUCTION

The use of medicinal plants for the treatment of many diseases is associated to folk medicine from different parts of the world. Natural products from some plants, fungi, and other organisms, continue to be used in pharmaceutical preparations either as pure compounds or as extracts. An increasing interest in herbal remedies has been observed in several parts of the world and many of the herbal remedies have been incorporated into orthodox medicinal plant practice.

Diseases that have been managed traditionally using medicinal plant include malaria, epilepsy, infantile convulsion, diarrhea, dysentery, fungal and bacterial infections. Medicinal herbis considered to be a chemical factory as it contains multitude of chemical compounds like alkaloids, glycosides, saponins, resins, oleoresins, sesquiterpene,lactones and oils.

Helminths are the parasitic worms which are large in sizeand so called macro parasites.The adult worms can be seen with nakedeye. Many of the mare transmitted via soil and infect the gastrointestinal tract,which makes the mintestinal worms. Some parasitic worms including leeche sand monogeneans, areecto parasitesthus, they are not classified as helminthes,which are endoparasites. Any disease or infection caused due to ahelmint his known as helminthiasis, helminth infection. They often live in the gastrointestinal tract of their hosts, but they may also burrow in too their organs,where they induce physiological damage. Helminthiasis has been found to result in poor birth outcome, poor cognitive development, poor school and work performance, poor socio economic development,and poverty.

MATERIALS&METHODS

COLLECTION & PREPARATION

The fruit so fcitrus sinensis and rhizomes of curcum along a are purchased from the local market of visakhapatanam south India.The plant and the plant material were identified and authenticated by the department of botany. Citrus fruits were was hed thoroughly by using tap water and were peeled off manually.All the peels were segregated in tot wohalves where one half weres had edriedat room temperature for 10 to 12 days. The dried peels were further made into small size and stored in air tight bagorjar for the later extraction process.The rhizomes of curcumalonga are washed thoroughly in water ,cut into small pieces and air dried for 2 week sat 35 to 40℃Cands tore dat 4℃Cinairtight containers for further studies.

EXTRACTION

Extraction is the first step to separate the desired natural products from the raw materials. Solvent extraction is the most widely used method.The extraction of natural productsprogresses through the following stages: (1) the solvent penetrates in to the solid matrix ; (2)the solute dissolves in the solvents; (3) the solute is diffused out of the solid matrix; (4) the extracted solutesare collected.Soxhlet extractionis beenused for the extraction process. Extractions use two immiscible phases to separate the substance from one phase into the other.

PHYTOCHEMICALANALYSIS

Chemical tests for the screening and identification of bioactive chemical constituents in the medicinal plants under study were

carried out in extracts as well as powder specimens using the standard procedures.

PHYTO CHEMICAL SCREENING

TEST FOR CARBOHYDRATES

MOLISCH'STEST

To the test solution add few drops of alcoholic alphanapthol then add few drops of concentrate dsulphuricacid through the sides of test tube wall purple to violet colourring appears at the junction.

BARFOED'STEST:

1ml of test solutionis heated with 1ml of barfoed'sreagenton water bath, if red cuprico xideis formed, mono saccharideis present.Disaccharide on prolonged heating (about10min)may also cause reduction, owing to partial hydrolysesto mono saccharides.

FEHLING'STEST

Add 1 mleachoffehling's solution A & B to1ml of test solution and heate dina water bath, if red precipitate of cupricoxide is formed, it indicates the presence of carbohydrates.

TEST FOR ALKALOIDS

MAYER'STEST

Alkaloids give cream colour precipitate withmayer'sreagent(potassium mercuriciodide solution)

WAGNER'STEST

Alkaloids give red dish brown precipitate with wagner'sreagent(iodine-potassium iodide solution)

3)DRAGONDORFF'STEST

Alkaloids give red dish brown precipitate with dragondroff'sreagent(potassium bi smuthiodide solution)

TESTFORTANNINS

TEST WITH FERRICCHLORIDE

Tannins give bluish black or brownish green colour with ferric chloride.

TEST WITH LEADACETATE

Tannins are precipitated by salts of blood.

TEST FOR FLAVONOIDS

The extract(1ml) was diluted in 1 ml of diluted sodium hydroxide,formation of yellow precipitate indicated the presence of flavonoids.

TEST FOR STEROIDS

The extract (1ml) was dissolved in 2ml of chloroform in a test tube ,and then 1 ml of concentrated sulphuric acid was added ,formation of reddish brown colour at the inter-phase indicated the presence of steroids.

TESTFORPHENOLS

TEST WITH FERRIC CHLORIDE

The extract (1ml) was added with 1 ml of 10 % ferric chloride.The formation of a greenish brown precipitate indicated the presence of phenols.

TEST FOR SAPONINS

FROTHING TEST

2g of extract was mixed and boiled with 20 ml of water and then filtered.5ml of distilled water is added in 10 ml of this filterate and was shaken vigorously for stable persistent froth.The formation off roth shows the presence of the saponinsin extract.

TEST FORANTHRAQUINONES

0.5g of the extract was boiled with 10ml of sulfuric acid and filtered while hot 5ml of chloroform used to shake the filterate.1ml of dilute ammonia was added in the chloroformlayer the resulting solution was observed for colour changes.

TEST FOR TERPENOIDS

To 0.5 g each of the extract was added 2ml of chloroform.To form a layer,concentrated sulfuric acid (3ml) was carefully added. A reddish brown appearance of the interface indicates the presence of terpenoids.

TEST FORGLYCOSIDES
TEST FOR CARDIACGLYCOSIDES

LEGALS TEST

Treat the test solution with pyridine and alkaline sodium nitroprusside solution, blood colour appears.

TEST FOR SAPONINGLYCOSIDES

FROTH FORMATION TEST

Place 2ml solution of drug in water in a test tube, shake well, stable for this formed.

TEST FOR FLAVANOID GLYCOSIDES

To the extract add Sodium hydroxide solution, yellow colour appears now add dilute sulphuric acid and the colour disappears and this indicates the presence of flavanoid glycosides.

TEST FOR PHYTOSTEROLS

SALKOWSKI TEST

Dissolve cholesterol in 2 ml of chloroform in dry test tube. Add equal amount of concentrated sulphuric acid (H_2SO_4). Shake gently, the upper layer turns red and the sulphuric acid layer shows a yellow colour with agreen fluorescence.

LIEBERMAN–BURCHARD TEST

Dissolve 1 or 2 crystals of cholesterol in dry chloroform in a dry test tube. Add several drops of acetic anhydride and then 2 drops of concentrated H_2SO_4 and mix carefully which givesa deep green colour.

RESULTS & DISCUSSION

The data revealed that the variou sex tracts obtained from the peels of citrussinensis & curcumalonga as a combinations how ed anthelminthic activity at 50 mg/ml, while the ethanolic extract showed significant results, which makes it a standard solvent.The concentrations of 10mg/ml, 20 mg/ml, 50mg/ml paralyzed at the same time but the time taken for death differed, out of these three concentrations, the plant drugs how optimum anthelminthic activityat 50mg/ml concentration.

Potency of the extract was inversely proportional to time take For paralysis and death of earth worms.The results were compared to standard drug ivermectin of various concentrations.

There forethe activity shown by a combinational drug is more potent when compared to individu alones.

Tab 1: Anthelminthic activity of variou sextracts obtained from citrussinensis & curcumalonga with different solvents:

S.No	Plantextracts	Conc(µ/ml)	Time taken for paralysis (min)	Time taken for death(min)
1.	Vehicle(controlsaline)	-	-	-
2.	Chloroform extracts	10	42.16±0.61	75.51±0.41
		25	35.29±0.28	68.28±0.12
		50	25.48±0.35	34.14±0.50
3.	Ethanolic extracts	10	37.75±0.52	68.66±0.13
		20	27.25±0.21	50.18±0.73
		50	20.11±0.72	26.09±0.76
4.	Hexane extracts	10	30.14±0.16	51.61±0.52
		20	18.52±0.15	34.49±0.58
		50	9.41±0.13	30.12±0.62
5.	Acetone extracts	10	40.10±0.57	65.48±0.38
		20	32.51±0.27	52.20±0.82
		50	23.81±0.32	32.10±0.45
6.	Ivermectin	10	16.24±0.84	42.14±0.21
		20	14.19±0.21	24.13±0.20
		50	7.14±0.22	19.32±0.27
7.	Ethanolic extract of volatile orange oil	10	15.22±0.60	18.30±0.24
8.	Ethanolic extaract of volatile curcuma oil	10	14.21±0.21	14.13±0.21
9.	Ethanolic extract of both citrussinensis & curcumalonga in combination	10	16.22±0.52	18.28±0.56

CONCLUSION

Ethanolic extract of citrussinensisat the conc of 10mg/ml showed the time of paralysis & death at 15 min and 18 min respectively. Ethanoli cextract of curcumalonga at conc10 mg/ml showed the time of paralysis & deathat 16 minand 18 min respectively. While the combination of both Citrus & Curcuma at conc10mg/ml showed the time of paralysis & death at 14.2 min and 14.3 min respectively. Finally it can be concluded that the combination of both citrussinensis & curcumalonga gives apo tent extract which shows significant anthelminthic activitya gainst earth worms.The current study leads to a conclusion that ethanolic extract of the plants possessa unique property when compared with the prevalentused drug. Further investigationis needed inorder to isolate the phyto chemical constituents responsible for anthelminthic activity.

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