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PHYTOCHEMICALANDPHARMACOLOGICALIMPORTANCEOFGENUSURTICA-AREVIEW

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ABSTRACT:The nettles are really members of the genus Urtica, which is in the family Urticaceae. There is a long history of using the Urtica herb for both medicinal and culinary purposes. The reason for its widespread usage isused traditionally as a natural cure for a wide range of ailments including arthritis, rheumatism, gout, kidney illness, jaundice, menorrhagia, anemia, eczema, and menorrhagia since the Bronze Age (3000 - 2000 B.C.). For a long time, it has been used as a first-aid medicine for a variety of ailments, including bites and stings, burns, hives, and difficulties with breastfeeding. The plant's phytochemical analysis uncovered a wide range of chemical components, including phytosterols, saponins, flavonoids, phenolic acids, tannins, proteins, and amino acids, all of which bode well for the plant's commercial cultivation and potential usage in natural medicines. Some of the pharmacological effects of this plant include its ability to reduce inflammation, alleviate pain, fight viruses, protect the liver, prevent diabetes, treat colitis, and even fight cancer.

Keywords: Urtica, nettles, Phytochemicals, Pharmacological, Traditional herbalremedy

INTRODUCTION:

Throughout history, the natural world has supplied humans with an abundance of plants and plant products that have medical properties. These extensive natural sources have yielded thousands of contemporary pharmaceuticals. Conventional wisdom on the therapeutic properties of plants has provided the foundation for the creation of many of these isolations 1. Herbal remedies are gaining popularity as an alternative to synthetic pharmaceuticals due to its lower price point, lower risk of side effects, and general lack of side effects. As a result, researchers are actively searching plants for the active biological components that might one day be employed as medications.

Historically, people have turned to a number of plants for treatment of various ailments. Herbal remedies have become more popular in the last many years. In our ancient texts of Ayurveda, Charak samhita, and Unani medicines, there is a wealth of information and understanding on the advantages of herbal remedies. There is reference to the medical use of plants in these texts 3.

Globally, there are over 80 species of urtica,

which is a member of the family Urticaceae. The popular name for the plant is stinging nettle. According to its name, this plant may cause chronic agony and burning when it comes into touch with human flesh because it releases an irritant.

"Uro" means "burn" or "urere" means "sting," and both words are derived from the Latin term for the species Urtica. Historically, people have made use of this sting by urticating, which involves thrashing a fresh plant over paralyzed or arthritic limbs to increase circulation and warmth. So yet, this herb has been underappreciated despite its promising medical use.

A diuretic agent, stinging nettle has long been utilized in traditional herbal therapy to alleviate arthritic and rheumatic pains. Supportive treatment with stinging nettle has many uses, including alleviating seasonal allergy symptoms, lowering the risk of developing benign prostatic hyperplasia, and helping diabetics keep their blood sugar levels under control 8, 9. A wide range of conditions, including eczema, abscess, wound piling, liver insufficiency, rheumatic pain, dermatophytic infections, and cancer, have traditionally been treated using the seeds and leaves of U. dioica in Middle Eastern medicine. Numbers 10, 11.

VernacularandLocalNames:

Commonname:StingingNettle

Assamese: Chorat

Hindi:Bichchhukali,Kandadli

Sanskrit: Vrscikali, Vrishchhiyaa-shaaka

Unani: Anjuraa,

(Kumaon)Folk language:

ShisuunLocalName:Bich

Botanical Description:¹⁵

chhubuti

Distribution:*Urtica*isfoundubiquitouslyinthewor ldasaweedplantchieflyinbarrenwastelandswithcha racteristicsattributeofunpleasantstinginghaironste msandleaves^{5,12}.Urticawasoriginallyfoundintheco olerregionsofnorthernEurope,Asiaandthewestern UnitedStates.Nowstingingnettlescanbefoundinma nyareasoftheUnitedStates,Canada,Europe,Asia,A fricaandSouthAmerica¹³.InIndia,ItisfoundintheHi malayasfromKashmir toKumaonataltitudesof 2,100-3,200m.Theplanthasreporteditspresencein Kashmir,Srinagar,Shimla,Rajasthan,andKerala ¹⁴.Thestingingnettleflourishesintemperateclimates where it can receive plentiful sunlight. Theplants are commonly found along rivers, lakes andstreams.



FIG.1:ACOMPLETENETTLEPLANTINITSHABITATATDALLAKE, PALAMPUR

Roots:extensiveundergroundnetworkofhardwin ter rhizomes, fibrous roots produced along withrhizomes.

Stem: Unbranched, and grow from 60 - 150 cmhigh covered with bristly stinging hairs slender andapproximatelysquarein cross section.

Leaves: Opposite, toothed, pointed stipules (smallleaf-like appendages) occur at the base of the leaf,but senesce early.Leaf stalks are 1/4 to 2/3 thelengthof theleaf,

Flowers: Tiny, greenish-white flowers monoeciousor dioecious in axillary cymose clusters, hangingpanicles.

Dioecious: perigone has 4 tepals, 4 stamens and 10varywith brush likestigma.

Monoecious: Male flower consist of only stamens, perianth of 4 segments. Stamens curve inward inbud stage and grow back at end of flowering foranthersto flingout thepollen.

Fruit: Stinging nettle produces a small, dry, oval-shaped, 1 seeded fruit (achene) that is yellow tograyishtan.Fruitsareclusteredalongdroopingflowerspike s,

Seeds:Erect,Albumenscanty,Cotyledonsrounde d.

II. Phytochemistry: Themajorchemical constit

uentsof*Urticadioica*areflavonoids,tannins,volatile compoundsandfattyacids,polysaccharides,isolecti ns,sterols,terpenes,protein, Vitamins and minerals^{16,17,18}.

GC-

MSanalysisshowsthepresenceof43compounds.Fat ty-acidesters(C14:0,C16:0,C18:1, C18:2, C18:3, C19:2, etc.), 9oxononanoic,hydroxycinnamic,andvanillicacids,f reefattyacids, andvanillin, eugenol,apiol, squalene,etc.made up most of the 36 identified compounds.

Inadditiontotheaforementionedcompounds,pyrazi ne and pyrazole derivatives were detected forthe first time in studied samples of HMT. Theseincluded 4- ethyl- 4, 5- dihydro- 5- propyl-1H-pyrazol-1-

carboxaldehydeisomers(I)andderivatives of hexahydropyrrolo- [1, 2-a]pyrazin- 1,4dione(II)with-3-alkyland-3phenylmethylsubstituents in addition to 5, 10diethoxy-2, 3, 7, 8-tetrahydro-1H,6Hdipyrrolo[1,2-a;1',2'-d]pyrazine (III)¹⁹.

Amino acid analysis shows dominating presence ofaspartic acid, asparagines, glutamic acid, alanine,andthreonineinhomeopathicmatrixtinctur eof*Urtica dioica*. Histidine was also identified in thetincture, indicating that the amino acid is in boundform ¹⁹. Arginine, isoleucine and leucine dominatedamongthefreeamino acids²⁰.

An unusual lectin has been isolated from *UrticadioicaL*.rhizomes.Itisasmall(8.5kDa) monomeric protein with high contents of glycine, cysteine and tryptophan²¹. Asparticacid and Alanine amino acids were isolated from the rootextract¹⁹.Polarextractsofthestinging nettle(*Urt icadioicaL*.)rootswere screened to have lignans(+)-neoolivil,(-)-

secoisolariciresinol, dehydrodiconiferylalcohol, is olariciresinol, pinoresinol, and 3, 4-

divanillyltetrahydrofuran. These compounds were is olated from Urticaroots

²². Root extract of *Urtica fissa* isolated 8 knownsteroidalcompounds β -

silosterol, daucosterol, palamiticacid, stigmasterol, α -spinasterol, potassiumnitrate, cholestrine-5, 22-

 traces only²³.

About nine types of carotenoids were isolated from the phytochemical analysis of leaves of U. dioicaatdifferent maturity stages which are, luteinisomers,β-caroteneandβlutein. caroteneisomerswerethemajorcarotenoidsfoundat 24 everylevelofmaturity Neoxanthin. violaxanthin and lycopenewerealsofoundasimportantcontributorsin specific leaf maturity stages. Leaves were analysedto have Chlorophyll A and Chlorophyll ²⁵. Urticadioicaleaveshave revealed the В presence of free(1.238%) and bound (4.87%)26 Thepresenceofc-andoamino acids glycosidesandproteins, ceramides, Vitamins. lignans, caffeic minerals. acidderivativecompounds, and high content of phen olic acidsincluding benzoic acids, cinnamicacids, coumarins, phytosterols flavonoid. Theleaves are rich in Vitamins B, C, K and mineralssuchascalcium, iron, magnesium, phospho rus, potassium and sodium²⁹. The carotenoid such as β carotene, hydroxyβcarotene, lutoxanthin, luteinepoxide and violaxanthin arereported³⁰.

Otherimportantconstituentsfoundareessentialam ino acids, glucokinnins and a very high contentofchlorophyll

^{31,32}. Thederivativesofshikimicacid like phenylpropanes, caffeic acid and variousestersofthisacidsuchaschlorogenicacidan dcaffeoyl malic acid have been identified ^{30,15,33}. *U.dioica* leaves revealed the presence of scopoletin,gentisicacid,proto-

catechuicacid,quinicacid,esculetin,quercetinand rutin.Thepresenceofphenolics,5-O-caffeoyl-

quinicacid(chlorigenicacid), quercitin 3-*O*rhamnosylglucoside (rutin) 3-*O*glucoside(isoquercitrin)anddiacanol(newphenol derivative)intheaqueousmethanolicextract of infloresence of the *Urtica dioica* specieshad been reported ^{27,34}.

Young leaves of *Urticacannabina*were screenedtohaveessentialmicroelementsandfattya cids^{35,}

³⁶. Amino acid been screened in *Urtica urens* wereAsparticacid,Threonine,SerineandAlanine¹

⁹.Ethanolic extract of leaves of *Urtica augustifolia*hadscreenedphytochemicallyforpres enceofsteroidal saponins³⁷.

The compounds responsible for the burning sensati on properties of leaf trichomes are acetylcholine, his tamine, 5-hydroxy tryptamine (serotonin), leukotrienes and formic acid ^{29,38,39}. The main components of essential oil of *U. dioica* seeds are carvacrol (38.2%), carvone (9.0%), naphthalene (8.9%), (E)- anethol (4.7%), hexahydrofarnesylacetone (3.0%), (E)geranylacetone (2.9%), (E)- β - ionone (2.8%) and phytol(2.7%) ¹⁷. The flavonoids are mainly kaempferol, is or hamnet in, quercet in, is oquercitrin, a stragalin,

rutin and their3- rutinosides and 3-glycosides⁴⁰,42

Lignansfrom the roots of *U. dioica* and their metabolit eswhich bind to human sex horm one binding globulin (SHBG) has been worked by Franciskovic *et al.*,

2017 ²². Telo*etal.*, 2017 ⁴³haveobservedcrystalstructureof*U.dioica*agglutin in(UDA),asuperantigenpresentedbyMHCmolecul es ofclassIand classII.

The stem extract of *Urtica cannabina* had screenedtohaveessentialmicroelementsandfatty acids(palmitic acid, stearic acid, oleic acid, lenoleic

acid,linolenicacid)andotherunsaturatedfattyacids³

³⁶. Phytochemical analysis of infloresence extractsof *Urtica dioica* has screened with highest amountof phenolics which as in root extracts are found tobein small traces only²⁷.

Fruits of *Urtica cannabina*has isolated to megastigmanesthatis+blumenoland(+)-

dehydrovomifoliolandfiveflavonoidglycosidestha t are isoquercitrin, astragalin, afzelil, quercitril,isovitexin⁴⁴.

FattyacidanalysishadscreenedpresenceofLinoleic acid (44.29%) and Oleic acid (34.93%) in the seed oil of *Urtica dioica* and from the seed oilsof*Urticapilulifera*screenedthepresenceofLinol eicacid(62.99%),Oleicacid(21.99%),

Linolenicacid(0.55%), Stearicacid(4.79%), Palmiti cacid(9.74%). Aminoacidanalysishadscreened Aspartic acid, threonine and serine from the seed oil of *Urtica dioica*^{19,26,45}.

Aspargine, Isoleucine, Leucine, Argininearethedo minantaminoacids which are screened from whole

plant of *Urtica dioica*. Steroidal analysis of *Urticacannabina* isolated three compounds identified as β -silosterol, scutellare in-7-o-a-L-rhamnosis de and bicenin-2^{19,26}.

III. Pharmacology: Anti-

diabetic: Thehydroalcoholicextractof U.dioica leaves prevents from severity of diabetes bypreventingsevereincreaseinbloodglucoseconce ntrationandalsoregenerates β -

cells, if used before induction of hyperglycemia⁴⁶. *U. dioica* leaves results in reduction in the level of blood glucose and glycated haemoglobin during strept ozoto cin(STZ)-induced diabetes⁴⁷. Hydro-

alcoholicextractof U.dioica leaves shows reduction in dexame thas one induced diabetes and its associated complications such as depressive likebehavior and cognitive dysfunction, hyperglycemia, plasma corticos terone and oxidative stress ⁴⁸.

The aqueous extract of plant 250 mg/kg has shownasignificantglucoseloweringeffectagainst alloxaninduceddiabetesinrats³². Thefructoseindu cedinsulinresistanceinmaleratshasbeenshownto decreaseserumglucoselevelonadministration of hydro- alcoholic leaf extract⁴⁹. *Urtica dioica* has been tested for the alpha amylaseinhibition activity and 60% inhibition is seen in 2mg/ml aqueous extract of plant ⁵⁰. Farzami *et al.*,2003⁵¹havereportedtheenhancementintheind uction of insulin secretion by a component of *U.dioica*leavesextractinperfusedIsletsofLangerh ans and its *in vivo* effects in normal andstreptozotocindiabeticrats.

The cold methanolic extract of leaves of *Urticadioic* a and *Urtica pilulifera* (250 mg/kg) has also shown significant antihyperglycemic effect in alloxan induced diabetes ^{52,53,54}.

Anti-inflammatory: U. dioica has been reported

toincreasetotalantioxidantcapacityandreduceinfl ammatorystress⁴⁷.Thetwomostprevalentactive chemical agents found in the Stinging Nettleareformicacid(methanoicacid)andhistami ne(1H-Imidazole-4-ethanamine;2-(4-Imidazolyl ethylamine;4-(2-Aminoethyl)-1H-

imidazole)whichfunction as an antiinflammatory $agent^7$. Seedoilexractof*U.dioica*hadaweakantiinflammatory effect in rats, had no analgesic effectsinmiceandisnon-

toxic⁵⁴.Atthedosageconcentrationof200and400 mg/kg,theMethanolicextractofplanthasbeensho wntoinhibit the abdominal twitches induced by aceticacid and paw edemainduced bycarrageenan⁵⁵.

Oninfusionof Urticadioicaleaf supplements N-

Methyl- D- aspartate(NMDA)injectionhasbeen reported to show brain lesion and subsequentinflammation in wistar rats significantly

reducing the nuclear factor kappa B(NF-kB) bind in gactivity to DNA showing a significant anti-inflam matory effect⁵⁶ and this activity is also found prevale ntin the ethanolic extract of *Urticafissa*. The extract of *Urticadioica* have been screened to have antiinflammatory activity due to inhibition of pro-

inflammatorytranscriptionfactorNF-

 κ Bduetopresenceofhighphenoliccontentsandthis activityisfoundinethanolicextractof*U.urens*duet o presenceofChlorigenicacid⁵⁷.

Anticancerous: Aqueousextractof*U.dioica*leaves were evaluated with anti-cancer activity inLNCaP treated prostrate carcinoma cell line ⁵⁸. Theextract shows significant reduction in LNCaP cellviability in a dose dependent manner, thus showscytotoxic effect using MTT Assay ⁵⁷. The extracthasbeenusedascomplementaryandalternati vetherapiesduringandafterthechemotherapictreat mentof cancer patients⁵⁹.

Leaf extract of *U. pilulifera* has been analyzed forits use in cancer treatment as it increase proteinconcentration and reduces the lipids in lipidemicliver and remodels the phospholipids compositionsshowingitspotentialtobeusedintreat mentofcancerdiseases.Aerialpartof*Urticapilulifer aextract*showshighestcytotoxicityagainstbreastinf ection,about85% ofthecellswerefounddeadattheco ncentrationof500µg/mlduetopresenceof phenolic compounds (phenolic compounds areknown to inhibit mutagenesis in humans)⁶⁰.

The aqueous extract of plant has been investigated for cytotoxic activity against MCF-7, MDA-231breast cancer cell lines by using the XTT cell cytot oxicity assay. On MCF- 7 cells; IC₅₀ value at 48th hr was 34 µg/ml increasing the concentration of aqueous extract to $29.2 \ \mu g/ml$ has been observed to decrease MDA-231 cell viability to $43\%^{61}$.

The aqueous extract of the *Urtica dioica* roots hasbeen analyzed *in vitro* for the cytotoxic effect anditsanticancerousactivityagainstacutemyelogen ousleukemiacell line⁶².

Methanolic extract of root of *U. pilulifera* has beenscreened to have antitumor activity due to presenceofflavanoids and phenolicacids⁵³.

Antioxidant: The hydro-

alcoholicextractof*U.dioica* showed positive *invitro* antioxidant activity.Ferulicacidisdetectedasapotentialantioxid ant presentinthespeciesusingHPTLC²⁰.Ithasantioxid ant, antimicrobial, antiulcer and analgesicproperties ⁶³. Its extract shows *in vitro* inhibition

ofseveralkeyinflammatoryeventsthatcausethesy mptomsof seasonal allergies⁶⁴.

Antiarthritic Activity: Methanolic extract of theroot of *Urtica dioica* has been used as a remedy forrheumatoid arthritis due to suppression of cytokineproduction 65 .

Methanolicleafextractof *U.pilulifera*hadanalyze d for antiarthritic activity as it inhabits the CFA induced paws welling, skinlesions and arti cular deformity by suppressing inflammatory nucle arfactor NF- κ Bin rats^{52,53,60}.

HepatoprotectiveActivity:Hepatoprotectionor anti-hepatotoxicity is the ability to prevent damagetotheliver,preventtheliveraffectionsprop hilacticallyandmaintainsbalanceinliverenzymes⁶

⁶.Theleavesextractofplantshowsmaximum hepatoprotective activity at dose of 400mg/kg concluded by the decreased level of serumalaninetransaminase(ALT),aspartateamin o-

transferase(AST),alkalinephosphatase(ALP),tot al bilirubin level and malonyldehyde (MDA) andalsobytheincreaseinlevelofsuperoxidedismut ase (SOD) level ^{67,68}. The seed extract of*Urticadioica*hasalsoshownhepoatoprotectivep rotectiveactivityagainstischemia-

reperfusioninducedhepatotoxicityanditexhibited hepatoprotective effect by increasing the activity ofparaoxonase, aryl-esterase and liver tissue catalaseactivity ⁶⁹.The plant extract has shown significanthepatoprotective effect in isolated rat hepatocytes(*invitro*)andinrabbits(*invivo*)reduces thechances of hepatocellular degeneration and necroticchanges in CCl₄inducedhepatotoxicity^{70,71,72}.

Anti- hyperlipidemic Activity: The plant exhibit potential antihyperlipidemic activity as it lo wers the concentrations of lipids and lipoproteins in blood. The dose of 150 mg/kg of the aqueous extract when supplemented for 30 days to rats feeding on normal or high fat diet, improved the blood lipid profile. The extract resulted to decrease in total cholesterol, and decreases the ratios of lowdensity/high density cholesterol (LDL/HDL) ratiosby lowering the content of LDL and plasma totalapo-protein B⁷³. The dose of 100 and 300 mg/kg of the ethanolicextract of the plant has shown significant reductionin the level of total cholesterol and LDL level inhypercholesterolemic rats^{74,75}.

Diuretic Activity: The aqueous extract of wholeplanthasbeenreportedwiththediureticandnat riuretic effects in rabbits ⁷⁶. The aqueous extractof aerial part of the plant was administered at

lowdose(4mg/kg/h)andhighdose(24mg/kg/h)whic hshowsdiuresiseffectbyincreasediuresis(11 and 84% respectively) and natriuresis (28 and143% respectively). Hence, the plant has shown tohave potential diuretic effect ⁷⁷. The diuretic effectis also found in *U. circularis* was approximately101% and 65% respectively with 100 mg/kg)⁷⁸.

Antimicrobial Activity: Hexane extract of U. dioicais analyzed to have antimicrobial activity against amultidrugresistantbacteria-*Mycobacteriumsemegmatis*. It is also assessed for having potentialantimicrobialactivityagainstallthetestedbacterialstrain sanditsminimuminhibitoryconcentration(MIC)val uewas125,15.62,31.25,

250,31.25,125and7.81µg/mlagainst*Enterococcus* faecalis, Escherichia coli, Klebsiellapneumoniae, Pseudomonas

aeruginosa,Staphylococcusau

*reus, Shigellaflexneri*and *Salmonellatyphi*, respecti vely^{79,80}. Aqueousextractfromtheleavesof *U.dioica* showed antibacterial activity against bacterias like *Bacilluscereus, Staphylococcusaureus, Staphyloco ccusepidermis, E. coli* and various other gram positive and gram negative bacteria^{63,45,81}.

Theseedoilextractof*Urticapilulifera*alsoscreened to have anti-bacterial property against *E.coli*, *Pseudomonas aeruginosa*, *Proteus mirabilis*,*Staphylococcusaureus*,*Bacillussubtilis*a nd*Enterococcusfaecalis*⁴⁵andthesameextractfrom *Urticacannabina*showedeffectiveantibacterial propertyagainst*E.coli* and *Staphylococcusaureus*⁸².

AntifungalActivity:Extractofnettleleavesatdiff erent concentrations showed antifungal activityagainst *R. solani*, *Fusarium oxysporium*, *F. solani*,*Alternaria alternate*. The antifungal activity

againstissuchthatthegrowthof*A.alternata*wasco mpletelyinhibitedat0.9% concentration. Theextra ct produced great reduction in mycelial growthwiththisfungusat(0.3,0.5and0.7)% with(3 0.5,

39.4 and 58.1) % percentage reduction ⁸³. Seed oilextract of *U. pilulifera* shows anti-fungal activityagainst*Candidaalbicans* and *Candidapar apsilosis*. The reason of this activity is presenceofKetaconazole and Fluconazole ⁴⁵.

Antiviral Activity: Antiviral activity is exhibited by the root of *U. dioica* against HIV-1, HIV-2, CMV, RSV, and flu virus ⁸⁴.

N-acetyl glucosamine specific lectin from *U. dioica*isscreenedforhavingastronganti-

HIVactivity, as it have high binding affinity towards HUT-8 cells, CD4+ and Molt/4 cells, the cells which are the bindingsites for HIV-1 and HIV-2 virus ^{66,85}.

NematicidalActivity:Therootexudatesof*U.dioi ca*,wheninterplantedwithtomatoandbeanshowsr eductioninthepopulationofplantnematodes. The chemical compound produced byroot in surrounding soil includes formic acid, that ishighly toxic for nematodes and cause Nematicidalactivity against Pratylenchus, Aphelenchoides andHelicotylenchus⁸⁶.

Anthelmintic Activity: The methanolic extract ofleaves of *U. dioica* exhibited anthelmintic activityagainst earth worms (*Pheretima posthuma*) with adose dependent increase in anthelmintic activity of the extract at dose25, 50, and 100 mg/ml⁶⁷.

 ${\bf TABLE1: PHYTOCHEMICALSANDPHARMACOLOGICALACTIVITYFOUNDINDIFFERENTS PECIES OF GENUS URTICA$

UNITON			
Nameofspecies	PlantPart	Phytochemicalsconstituents	Pharmacologicalactivity
Urticapilulifera	Seeds	Fattyacids-Palmitic, Stearic, Oleic, Linoleic acid ⁴⁵	Hypoglycemic, Antioxidant ¹²
	Leaf		Anti-arthritic ⁵²
	Herb		Anti-tumor ⁵³
	Root		Antioxidant ⁵³
Urticaparviflora	Leaf	Histamine, Serotonine, Acetyl-choline, Protein-	Hepatoprotective,
		Aspartic acid, serine, threonine,	Woundhealing,
		tryptophan,tyrosine ⁸⁷	Hypoglycemic, Antioxidant, Ca
			rdioprotective,
			Nephroprotective ⁸⁷
Urticaartichocaulis	Aerialparts	Phenols-Chlorigenicphaselic Salicyliccaffeic	Antirheumatoidarthritis, Anti-

		acids,Proto-catecheuicaldehyde Flavonoids-rutin, Ouercitin,Luteolin ⁸⁸	inflammatory, Analgesic ⁸⁸
Urticafissa	Aerialparts		Anti-hyperplasic ⁸⁹
0	Roots	Steroidal compounds- β-sitosterol,	
		daucosterol,palamiticacid,stigmasterol,α-	
		spinasterol,	
		potassium nitrate, cholestrine-5, 22-enyl-3 β -	
.	** 1	alcohol,stigmasterol-3-o-β-D-glucopyranoside ³⁹	
Urticalaetivirens	Herb		Anti-proliferative, Anti- apoptotic, Anti-arthritic ⁹⁰
Urticaurens	Aerialpart	Aminoacid-	Anti-inflammatory ⁵⁷ ,
		Asparticacid,Threonine,SerineandAlan ine ¹⁹ Chlorigenic acid ⁵⁷	Anxiolytic ⁹¹
Urticacannabina	Driedfruit	Megastigm-anes-(+)-blumenolA,(+)-	
		Dehydrovoifolial, Flavonoidglycosides-	
		Isovitexin, Astragalin, Afzelin, Quercitin, Iso-	
T T I	TT 1	Quercitin ⁴⁴	TT d
Urficadioica	Herbs	Phenols- Caffeoyl-malic acid, caffeic	Hepato-
		steroids ⁹² Aminoacid-	heumatoid
		Asparticacid, Threoonine, Serine, Alanine ⁹² Pheno	arthritis ⁶⁵
		ls-Pinoresinol, Neolivil ⁹²	
	Deet	Unusuallectins.	Antipus statishymour lasis ⁵⁴
	KOOL	secoisolariciresinol dehydrodiconiferyl alcohol	Antiprostationyperphasic
		isolariciresinol.pinoresinol.and3.4-divanillyl-	
		tetrahydro-furan ²²	
	Leaf	Carotenoids - lutein, lutein isomers, β -carotene	Anti-diabetic,
		andβ-caroteneisomers, Aminoacid-	Anti-inflammatory, Anti-
		Valine, Threonine, Methionine, Isoleucine, leucine, L	apoptotic, Cytotoxic, Anti-
		ysine, Dhanalala aina Uiatidinaan daaainina ⁵⁴	cancerous
		Phenylala-nine, Histidineandarginine	
		ceramides Vitamins, minerals, lignans, caffeic	
		acidderivative phenolicacidsbenzoicacids cinnam	
		icacids.flavonoid.coumarins.phytosterols ^{27,28} .	
		Vitamins B, C, K minerals such as calcium,	
		iron, magnesium, phosphorus, potassium and sodium	
		²⁹ .carotenoidsuch asβ-carotene,hydroxyl-	
		β-carotene,lucoxanthin,lutein-epoxideand	
		violaxanthin ³⁰	
	Seed	Fattyacid-	Anti-diabetic, Anti-
		Palmitic, stearic, Oleic, Linoleicand Eicosenoic acid,	inflammatory ⁴⁷
		Amino acid Aspartic acid,threonine,serine	
		Essentialoils-Carvacrol,	
	Stinging	formicacid histamine serotonin ⁹³ Acetylcholine I	
	hairs	eukotriene ³⁹	
	Infloresence		Analgesic, Antiviral ^{84,85}

CONCLUSION:Thebioactivecompoundsisolate d from the Urtica plant have been reported toshowvariousmedicinal,antiproliferative,andanti microbialactivities.So,thebioactivecompoundsisol atedfromtheplantwillhelpindesigningnewdrugsan dotherpharmaceuticalcompoundstofightagainstwi despreaddiseaseslikecancer,arthritis,Skindiseases, *etc.*Phytochemicalstudiesontheplantrevealedprese nceofvariouschemicalcompoundslikephytosterols , saponins, flavonoids, tannins, proteinsand amino-acids that showed beneficial potential oftheplantto getcommercially cultivatedandgetusedforthenaturaldrugsandmedic ine.Presence

ofVitamins,phenoliccompounds,macroandmicr o-elements,tannin,flavonoids,sterols,fattyacids, carotenoids, chlorophylls, accorded the planttogetutilizedindifferentways.Thebioactivec ompounds isolated from the plant will help indesign in gnewdrugs and other pharmaceutical compound

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