

# Medicinal plant genus *Urtica*- Traditional uses phytochemical and pharmacological review

## Abstract

Herb and shrubs of the genus *Urtica* (*Urticaceae*) inhabitate various ecosystems in worldwide. This study was carried out in order to contribute to the knowledge of this medicinal species. This review describes the botanical characterization and distribution, and phytochemical properties and biological activities of *Urtica* genus. *Urtica* genus contain many chemical constituents like, flavonoids, phenolic compounds like Diocanol, alcohols, Terpenes diols, Diol glucosides, Sugars. Some published studies have shown a broad spectrum of biological and pharmacological activities, including anticancer, antioxidant, anti-tumor agent, antibacterial, antimicrobial, antifungal and antiviral effects. Other have indicated anti-malaria agent, hypoglycemic and act as bioactive agent with anti-proliferation activities of this species. In vitro studies and in vivo models have provided a simple explanation for bioscientific and its various pharmacological uses. All information about the *Urtica* genus was collected from electronic search (using Pubmed, Google Scholar, ScienceDirect.com and Web of Science) and a library search for articles published in peer-reviewed journals.

## Introduction

The genus *Urtica* belongs to the family *Urticaceae*. The name *Urtica* is obtained from Greek word 'Uro' which means burning and Dioica means bipod [1] There is controversial opinion of researchers about number of species belonging to *Urtica*. Many groups of researchers have reported 30 species [1,2] In Flora of China the *Urticaceae* as being composed of 47 genera

and 1,300 species worldwide [3] All these species are widely distributed throughout the world. The species of *Urtica* along with their regions of existence are presented in Table 1

Sr no	Species of <i>Urtica</i>	Region of existence in the world	Region of existence in Pakistan	Ref#
1	<i>Urtica dioica</i> .	Switzerland, mild regions of Europe, Asia and Italy	Kaki, Kabul valley and Swat	[4,5,6]
2	<i>Urtica</i> “ <i>incaica</i> ”	Peru, Australia, Ecuador, Bolivia, parts of Chile, Argentina, coast, the Sierra, and Amazon	Absent in Pak	[7,8]
3	<i>Urtica</i> “ <i>deltoidea</i> ”	New Zealand, Asia, California, <u>Sonoran Desert</u> , and region of <u>North America</u>	Absent in Pak	[2]
4	<i>Urtica atrichocaulis</i>	China, Japan, Korea, Guizhou, Sichuan, Yunnan provinces, Himalayas and China's south-west	KPK	[2,4,5,6]
6	<i>Urtica longispica</i>	Ecuador	Absent in Pak	[4]
7	<i>Urtica aspera</i>	South Island and New Zealand	Absent in Pak	[4]
8	<i>Urtica gracilentia</i>	Arizona, New Mexico, west Texas, Northern Mexico, Central America and Iran	Absent in Pak	[7,8,9]
9	<i>Urtica mairei</i>	Himalaya, southwestern China, Northeastern India and Myanmar,	KPK	[4,7,8]
10	<i>Urtica parviflora</i>	Himalaya [lower altitudes] and India	KPK	[7,8]

11	<i>Urtica ardens</i>	South Island, New Zealand and China	Kabul valley, Swat	[4,5,8]
12	<i>Urtica pilulifera</i>	Cyprus, Sail Husban, Nauor-Jordan, Italy, Sicily, south of France and Southern Europe	Kabul valley, Swat	[7,8,10,11]
13	<i>Urtica fissa</i>	China and Asia	Absent in Pak	[2,8]
14	<i>Urtica dentata</i>	North America	Absent in Pak	[4]
15	<i>Urtica sondenii</i>	Northeastern Europe, Northern Asia, Nordic countries and Russia	Absent in Pak	[7,8]
16	<i>Urtica taiwaniana</i>	Taiwan and Indonesia	Absent in Pak	[7,8]
17	<i>Urtica triangularis</i>	Japan and China	Absent in Pak	[2]
18	<i>Urtica australis</i>	South Island, New Zealand, surrounding sub Antarctic islands and Asia	Absent in Pak	[2]
19	<i>Urtica laetevirens</i>	Tibet, Asia, Mongolia, Japan and Manchuria	Absent in Pak	[7,8,12]
20	<i>Urtica massaica</i>	Africa	Absent in Pak	[4]
21	<i>Urtica ferox</i>	New Zealand and Australia	Absent in Pak	[7,8]
22	<i>Urtica hyperborea</i>	Peru, high plateaus of the Black Sea, Himalaya from Pakistan to Bhutan and Mongolia and Tibet at high altitudes	Kabul valley, Swat	[7,8]
23	<i>Urtica andicola</i>	Peru	Absent in Pak	[4]

24	<i>Urtica flabellata</i>	Peru, Colombo, Ecuador, Bolivia and Argentina	Absent in Pak	[13]
25	<i>Urtica stachyoides</i>	Spain [Tenerife]	Absent in Pak	[4]
26	<i>Urtica lalibertadensis</i>	Peru	Absent in Pak	[4]
27	<i>Urtica atrovirens</i>	Italy and Western Mediterranean,	Absent in Pak	[4,7,8]
28	<i>Urtica kioviensis.</i>	Germany, Britain, France, the Netherlands and Eastern Europe	Absent in Pak	[7,8]
29	<i>Urtica leptophylla</i>	Peru and eastern North America from Nova Scotiato Florida	Absent in Pak	[7,8]
30	<i>Urtica urens</i>	Peru, Europe, highland, and Asia, Italy, Aegean and North America	Kaki, Swat	[2,7,8]

The species of *Urtica* are medicinally well known throughout the world and locally used against various diseases. The ethnobotanical surveys regarding various species of *Urtica* reflect that the genus is medicinally very important. The species of *Urtica* were employed for the treatment of various ailments like allergy, rheumatoid arthritis, cough etc by the local people. The mode of application of *Urtica* species against various diseases is summarized in Table 2 Table 2. The mode of application reported in various ethnobotanical surveys

Sr	Species of	Local use of Plant	Region of	Ref#
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no	<i>Urtica</i>		existence in Pakistan	
1	<i>Urtica dioica.</i>	Leaf extract use for skin treatment	Palestinian area	[14]
2	<i>Urtica</i> “ <i>incaica</i> ”	Leaf extract use to treat rashes and burns	Peru	[15]
3	<i>Urtica</i> “ <i>deltoidea</i> ”	Leaf past use to treat skin	New Zealand	[16]
4	<i>Urtica atrichocaulis</i>	Its extract and past use to treat rheumatoid arthritis.	China and Yunnan provinces	[17]
5	<i>Urtica magellanica</i>	Its extract and past use to treat allergy, arthritis	Argentina	[18]
6	<i>Urtica longispica</i>	Its extract use to treat cough	Ecuador	[19]
7	<i>Urtica aspera</i>	Extract use to treat stomach diseases, snake bites and as antipyretic	South Island	[20]
8	<i>Urtica gracilentia</i>	Leaf paste use to treat burns	Iran	[9]
10	<i>Urtica parviflora</i>	Its paste use to treat arthritis	Himalaya [lower altitudes] and India	[10]
11	<i>Urtica ardens</i>	Whole plant uses to treat Exorcism	India and Garhwala Himalaya	[21]
12	<i>Urtica pilulifera</i>	Leaf extract use for diabetes and skin treatment	Palestinian area	[22]
13	<i>Urtica fissa</i>	Its extract use to treat arthritis	China and Asia	[2]
14	<i>Urtica procera</i>	Its aqueous extract use against kidney problems	North America	[23]

15	<i>Urtica sondenii</i>	Paste use to treat skin problems	Nordic countries,	[24]
16	<i>Urtica taiwaniana</i>	Its extract use against hypotensive	Taiwan	[18]
17	<i>Urtica triangularis</i>	Both extract and paste use to treat arthritis	Japan	[23]
18	<i>Urtica australis</i>	Extract use to treat skin diseases	South Island	[10]
19	<i>Urtica laetevirens</i>	Its extract use against allergic reaction	Tibet	[2]
20	<i>Urtica massaica</i>	Its paste use to treat skin rashes and as anti-malaria	Africa	[15]
21	<i>Urtica ferox</i>	Its extract use to treat skin problems	New Zealand	[20]
22	<i>Urtica hyperborea</i>	Its extract use against skin rashes	Peru	[10]
23	<i>Urtica andicola</i>	Its extract and paste use to treat arthritis	Peru	[24]
24	<i>Urtica flabellata</i>	Both extract and paste use to treat arthritis	Peru	[2,25]
25	<i>Urtica stachyoides</i>	Its extract use to treat diuretic problems	Spain	[2]
26	<i>Urtica lalibertaden sis</i>	Its extract use to treat liver diseases	Peru	[26]
27	<i>Urtica atrovirens</i>	Paste use to treat arthritis	Western Mediterranean	[10]

28	<i>Urtica kioviensis</i> .	Extract and paste use to treat arthritis	an, Eastern Europe	[27]
29	<i>Urtica leptophylla</i>	Extract and paste use to treat arthritis	Peru	[2]
30	<i>Urtica urens</i>	Leaf extract use for skin treatment	Palestinian area	[22]

*Vitro* and *in vivo* studies were reported in a number of articles for the species of *Urtica*. In this regard, studies were conducted to check the potential of *Urtica* species against arthritis, constipation, pulmonary disorders, liver, intestine and kidney diseases, diabetes, fungal infections, anti-inflammatory, internal injury, wounds etc. The summarized data in this connection is presented in Table 3.

Sr no	Species of <i>Urtica</i>	Disease	Mode of applications	Ref#
1	<i>Urtica dioica</i> .	Arthritis [ <i>in vivo</i> ], constipation [ <i>in vivo</i> ], pulmonary disorders [ <i>in vivo</i> ], liver [ <i>in vivo</i> ], intestine and kidney [ <i>in vivo</i> ], diabetes [ <i>in vivo</i> ], fungal infections [ <i>in vitro</i> ], anti-inflammatory [ <i>in vitro</i> ], internal injury [ <i>in vivo</i> ] and wounds [ <i>in vivo</i> ].	Aqueous extract	[2,10,15,24]
2	<i>Urtica</i> “ <i>incaica</i> ”	Arthritis [ <i>in vivo</i> ], liver [ <i>in vivo</i> ], intestine [ <i>in vivo</i> ] and anti-inflammatory [ <i>in vitro</i> ]	Extract	[2,15]
3	<i>Urtica</i> “	Arthritis [ <i>in vivo</i> ],	Leaves paste,	[15,19]

	<i>deltoidea''</i>	antioxidant [ <i>in vivo</i> ], anti-inflammatory [ <i>in vitro</i> ], anti-ulcer [ <i>in vivo</i> ], Anticancer [ <i>in vivo</i> ], antimicrobial [ <i>in vitro</i> ], cardiovascular [ <i>in vivo</i> ], and hepatic protective [ <i>in vivo</i> ]	extract	
4	<i>Urtica atrichocaulis</i>	rheumatoid arthritis [ <i>in vivo</i> ], anti-inflammatory [ <i>in vitro</i> ], anti-arthritic [ <i>in vivo</i> ], antioxidant [ <i>in vivo</i> ] and immune-modulatory [ <i>in vivo</i> ]	Aqueous extract	[2,17]
5	<i>Urtica magellanica</i>	Eczema [ <i>in vivo</i> ], gout [ <i>in vivo</i> ], Urticarial [ <i>in vivo</i> ], allergic rhinitis [ <i>in vivo</i> ], and rheumatoid arthritis [ <i>in vivo</i> ] and the root is used to treat benign prostatic hypertrophy [ <i>in vivo</i> ]	Extract, paste	[28]
6	<i>Urtica longispica</i>	Fungal infections [ <i>in vivo</i> ], antibacterial [ <i>in vivo</i> ], antiviral [ <i>in vivo</i> ], blood purifications [ <i>in vivo</i> ] and respiratory diseases [ <i>in vivo</i> ]	Extract	[19]
7	<i>Urtica pera</i>	Leucorrhoea [ <i>in vivo</i> ], Haemorrhoids [ <i>in vivo</i> ], obesity [ <i>in vivo</i> ], oligomenorrhoea [ <i>in vivo</i> ], gastric ulcers [ <i>in vivo</i> ] and anti-cholesterol [ <i>in vivo</i> ]	Paste, extract	[20]
8	<i>Urtica gracilentia</i>	anti-inflammatory aid for rheumatism and arthritis [ <i>in vivo</i> ], hyperplasia [ <i>in vivo</i> ] and fungal infections [ <i>in vivo</i> ].	Paste, extract	[24]
9	<i>Urtica mairei</i>	Kidney [ <i>in vivo</i> ], diabetics [ <i>in vivo</i> ], fungal infections [ <i>in vitro</i> ], anti-inflammatory [ <i>in vitro</i> ]	Extract, paste	[15,24]



		and arthritis [ <i>in vivo</i> ].		
10	<i>Urtica parviflora</i>	Antitumor [ <i>in vivo</i> ], astringent [ <i>in vivo</i> ], diuretic [ <i>in vivo</i> ], inflammation [ <i>in vitro</i> ] and arthritis [ <i>in vivo</i> ]	Extract	[29,30]
11	<i>Urtica ardens</i>	Exorcism [ <i>in vivo</i> ], Jaundice [ <i>in vivo</i> ], post calving care [ <i>in vivo</i> ], sprains [ <i>in vivo</i> ], bones fracture [ <i>in vivo</i> ], hematuria [ <i>in vivo</i> ], neck sore [ <i>in vivo</i> ] and yolk sore [ <i>in vivo</i> ]	Extract, paste	[24,30]
12	<i>Urtica pilulifera</i>	Inflammation [ <i>in vitro</i> ], and arthritis [ <i>in vivo</i> ], internal bleeding [ <i>in vivo</i> ], anemia, excessive menstruation [ <i>in vivo</i> ], hemorrhoids [ <i>in vivo</i> ], rheumatism [ <i>in vivo</i> ], hay fever [ <i>in vivo</i> ], kidney Problems [ <i>in vivo</i> ], pain and skin problems [ <i>in vivo</i> ], abdominal pain [ <i>in vivo</i> ], internal diseases [ <i>in vivo</i> ], antiasthma tic [ <i>in vivo</i> ], antitumor [ <i>in vivo</i> ], astringent [ <i>in vivo</i> ], Diuretic [ <i>in vivo</i> ], antidandruff [ <i>in vivo</i> ], galactogogue [ <i>in vivo</i> ], depurative and Antihyperglycaemic [ <i>in vivo</i> ]	Extract, paste	[2]
13	<i>Urtica fissa</i>	rheumatoid arthritis [ <i>in vivo</i> ]	Aqueous extract	[2]
14	<i>Urtica dentate</i>	Rheumatoid arthritis [ <i>in vivo</i> ], kidney stones [ <i>in vivo</i> ] and ant lithic effects [ <i>in vivo</i> ]	Aqueous extract	[2,23]
15	<i>Urtica sondenii</i>	Kidney [ <i>in vivo</i> ], diabetes [ <i>in vivo</i> ], fungal infections [ <i>in vitro</i> ], anti-	Extract, paste	[15,24]

		inflammatory [ <i>in vitro</i> ], and arthritis [ <i>in vivo</i> ]		
16	<i>Urtica taiwaniana</i>	Anti-hyperglycemic [ <i>in vivo</i> ], antioxidant [ <i>in vivo</i> ], hepatic protective [ <i>in vivo</i> ], antiviral [ <i>in vitro</i> ], diuretic [ <i>in vivo</i> ] and hypotensive [ <i>in vivo</i> ]	Extract	[18]
17	<i>Urtica triangularis</i>	Kidney [ <i>in vivo</i> ], diabetes [ <i>in vivo</i> ], fungal infections [ <i>in vitro</i> ], anti-inflammatory [ <i>in vitro</i> ] and arthritis [ <i>in vivo</i> ]	Extract, paste	[23]
18	<i>Urtica australis</i>	Kidney [ <i>in vivo</i> ], diabetes [ <i>in vivo</i> ], eczema [ <i>in vivo</i> ], fungal infections [ <i>in vitro</i> ], anti-inflammatory [ <i>in vitro</i> ] and arthritis [ <i>in vivo</i> ]	Extract	[15]
19	<i>Urtica laetevirens</i>	Rheumatoid arthritis [ <i>in vivo</i> ], rheumatism [ <i>in vivo</i> ], eczema [ <i>in vivo</i> ] and allergic rhinitis [ <i>in vivo</i> ]	Aqueous extract	[2,4]
20	<i>Urtica massaica</i>	Eczema [ <i>in vivo</i> ], Skin rashes [ <i>in vivo</i> ], dermatitis [ <i>in vivo</i> ] and diuretic [ <i>in vivo</i> ]	Paste	[10,15]
21	<i>Urtica ferox</i>	Anti-hyperglycemic [ <i>in vivo</i> ], antioxidant [ <i>in vivo</i> ], hepatic protective [ <i>in vivo</i> ], antiviral [ <i>in vitro</i> ], diuretic [ <i>in vivo</i> ], hypotensive [ <i>in vivo</i> ] and anti-aggregate [ <i>in vivo</i> ]	Paste	[20,30]
22	<i>Urtica hyperborea</i>	Skin rashes [ <i>in vivo</i> ], dermatitis [ <i>in vivo</i> ], eczema [ <i>in vivo</i> ] and diuretic [ <i>in vivo</i> ]	Paste, extract	[10]
23	<i>Urtica andicola</i>	Anti-hyperglycemic [ <i>in vivo</i> ], antioxidant [ <i>in vivo</i> ], hepatic protective	Extract	[2,24]

		[ <i>in vivo</i> ], antiviral [ <i>in vitro</i> ], diuretic [ <i>in vivo</i> ], hypotensive [ <i>in vivo</i> ] and anti-aggregate [ <i>in vivo</i> ]		
24	<i>Urtica flabellata</i>	Anti-hyperglycemic [ <i>in vivo</i> ], antioxidant [ <i>in vivo</i> ], hepatic protective [ <i>in vivo</i> ] and antiviral [ <i>in vitro</i> ]	Extract, paste	[25]
25	<i>Urtica stachyoides</i>	Anti-hyperglycemic [ <i>in vivo</i> ], antioxidant [ <i>in vivo</i> ], hepatic protective [ <i>in vivo</i> ], antiviral [ <i>in vitro</i> ], diuretic [ <i>in vivo</i> ], hypotensive [ <i>in vivo</i> ] and anti-aggregate [ <i>in vivo</i> ]	<b>Extract, paste</b>	[2]
26	<i>Urtica lalibertadensis</i>	<b>Anti-hyperglycemic [<i>in vivo</i>], antioxidant [<i>in vivo</i>], hepatic protective [<i>in vivo</i>] and antiviral [<i>in vitro</i>]</b>	Extract	[26]
27	<i>Urtica atrovirens</i>	Anti-hyperglycemic [ <i>in vivo</i> ], antioxidant [ <i>in vivo</i> ], hepatic protective [ <i>in vivo</i> ], antiviral [ <i>in vivo</i> ] and arthritis [ <i>in vivo</i> ]	Paste, extract	[10]
28	<i>Urtica kioviensis</i> .	Hepatic protective [ <i>in vivo</i> ], antiviral [ <i>in vitro</i> ], arthritis [ <i>in vivo</i> ]	Paste, extract	[30]
29	<i>Urtica leptophylla</i>	Arthritis [ <i>in vivo</i> ], fungal infections [ <i>in vitro</i> ] and antimicrobial [ <i>in vitro</i> ]	Paste, extract	[2]
30	<i>Urtica urens</i>	Arthritis [ <i>in vivo</i> ]	Paste, extract	[2]

The species of *Urtica* possess a diversity of phytochemicals which range from straight chain alcohols to much more diverse and complex structures. In this

regard, various extraction and isolation strategies were employed by the workers from simple column chromatography to HPLC and GC techniques. The structures were elucidated by modern spectroscopic techniques. Table 5-10 reflect the compounds isolated from various species of *Urtica*.

### **1. *Urtica dioica***

*Urtica dioica* is an erect medium sized herb. It is a perennial herb. Its stem is up to 4 ft. tall but has little branches, grooved and covered with stinging hairs. Its leaves are 5-10 cm long and ovate or lanceolate and wrinkled in shaped. Its leaves are minute green in color. Its petioles are 6 mm to 5 cm long and its stipule are united, means male and female flowers are on separate plants [4].

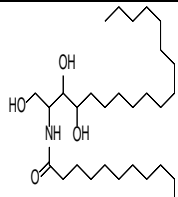
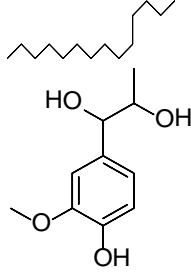
*Urtica dioica* is present in Switzerland, mild regions of Europe, Asia, Italy and Pakistan. As far as its occurrence in Pakistan is concerned, it is found in Kaki, Kabul valley and Swat [4,5].

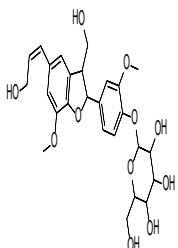
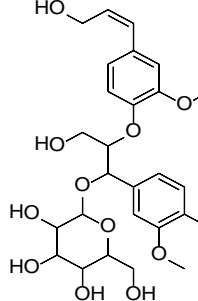
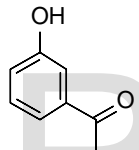
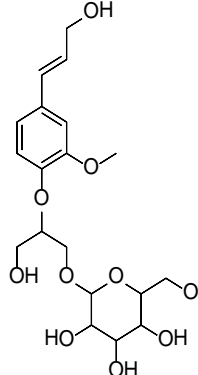
*Urtica dioica* is the only species of *Urtica* to be cultivated commercially for pharmaceutical purposes and the commercial extraction of chlorophyll and stem fibers. The Leaf extract of *U. dioica* are locally used for skin treatment Its aqueous extract is used to treat arthritis, constipation, pulmonary disorders, diseases associated with liver, intestine and kidney diseases, diabetes, fungal infection, inflammation, internal injury and for the treatment of wounds [2,10,31]. A wide range of metabolites have been reported from *U. dioica*, including flavonoids and Caffeic acid analogues. Apart from these aromatic compounds, pentacyclic triterpenoids and oxygenated fatty acids have been found in *U. dioica* roots.

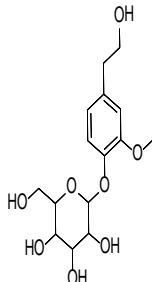
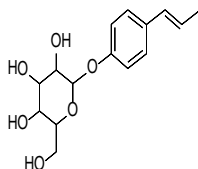
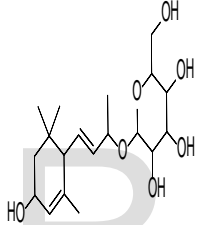
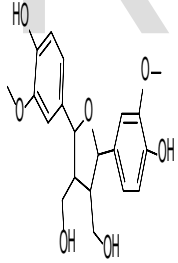
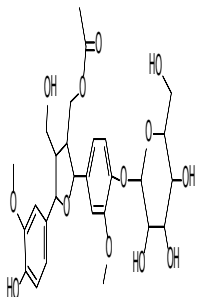
The compounds from *Urtica dioica* were isolated by conventional LC separation, Ultra performance liquid chromatography [UPLC] techniques. However, LC–MS and [LC–ESI-MS] have also been employed for isolation

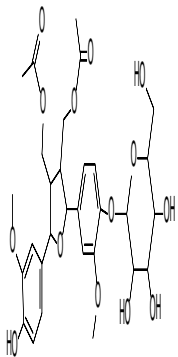
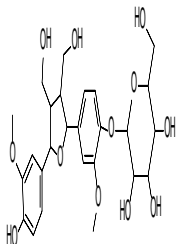
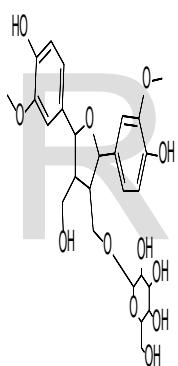
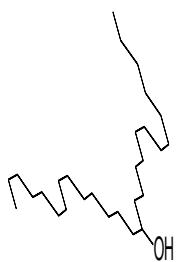
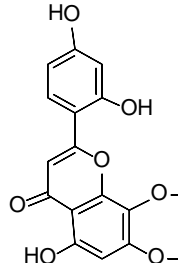
and as well as characterization. In addition to LC, gas chromatography [GC] and MS techniques have also been employed for characterization (Jan et al., 2012).



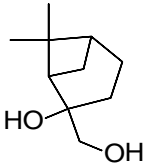
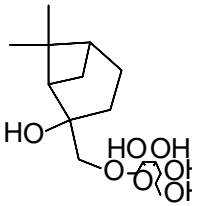
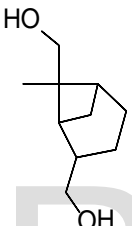
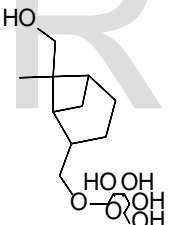
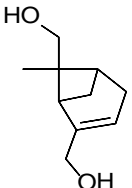
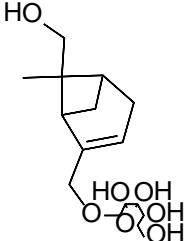
Sr no	Compound name	Mol. Formula & M. weight	Biological Source	Biological Activity	Structure	Ref#
1	2-Amino-1,3,4-Octadecane-triol	C <sub>42</sub> H <sub>85</sub> N O <sub>4</sub>	Isol from the Yeast <i>Yarrowia Lipolytica</i> . Also from the roots of <i>Urtica dioica</i>	Seed hull extract that inhibit lipopolysaccharide induced inflammation in RAW. Also antibacterial activity.		[30]
2	1-[3,4-Dihydroxyphenyl]-1,2-propanediol;3-Me ether	C <sub>10</sub> H <sub>14</sub> O <sub>4</sub> 198.218	Constit.of ginger [ <i>Zingiber officinale</i> ] and <i>Urtica dioica</i>	Aqueous coacervate compositions suitable for making powders and water-soluble formulations of biologically-active agents Manufacture of neutral cellulase with psychrophilic Geomyces		[31]

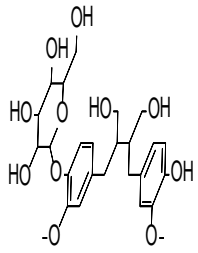
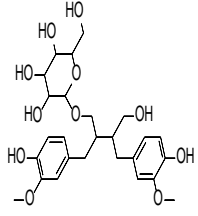
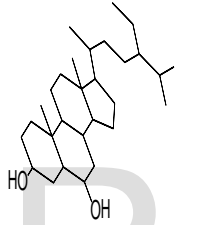
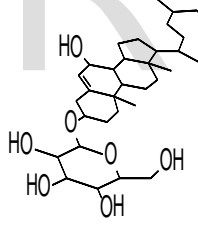
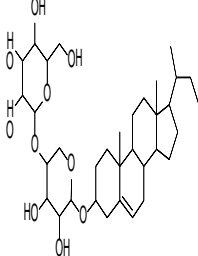
- |   |   |                                   |   |   |  |         |
|---|---|-----------------------------------|---|---|--|---------|
| 3 | 4,7-Epoxy-3,8-bilign-7-ene-3,4,5,9,9-pentol                   | $C_{26}H_{32}O_1$<br>1<br>520.532 | Constit. of cistanche tubulosa, Urtica dioica and vinca rosea                     | Biological fluid from diarrheic piglets, foals and human infants.   |     | [30]    |
| 4 | 3,3,4,7,9,9-Hexahydroxy-4,8-oxyneolign-7-ene.                 | $C_{26}H_{34}O_1$<br>2<br>538.547 | Constit of Urtica dioica and cane sugar   | The effects of chronic AMPK activation on hepatic triglyceride accumulation and glycerol 3-phosphate acyltransferase activity with high fat feeding |    | [32]    |
| 5 | 3-Hydroxyacetophenone   | $C_8H_8O_2$<br>136.150            | Constit of Dianthus caryophyllus [caryophyllaceae] and Urtica dioica [urticaceae] | Thielavins A, J and K: $\alpha$ -Glucosidase inhibitors from MEXU 27095, an endophytic fungus from Hintonia latiflora                               |     | [33]    |
| 6 | 2-[2-Hydroxy-4-[3-hydroxy-1-propenyl]phenoxy] 1,3-propanediol | $C_{19}H_{28}O_1$<br>0<br>416.424 | Constit of clerodendrum bungei and urtica dioica.                                 | The evolution of the recreational use of ketamine and methoxamine. Thoughts on the historical discovery of DNA.                                     |  | [34,35] |

7	2-[4-hydroxy-3-methoxyphenyl] ethanol.	$C_{15}H_{22}O_8$ 330.334	Constit of cinamomum reticulatum and urtica dioica.	Used as acetohydroxy acid synthase inhibitors, as intermediate for use in manufacture of acetylene-terminated resin.	 [36]
8	3-[4-Hydroxyphenyl]-2-propen-1-ol.	$C_{15}H_{20}O_7$ 312.319	Constit of arum italicum, Lilum cordatum, millingtonia hortensis and urtica dioica.	Act as antiproliferative activities against MCF-7, WIDr and HEP-2. and Doay human tumor cell lines. Also act as anti-oxidant.	 [37]
9	4, 7-Megastigmadiene-3,9-diol.	$C_{19}H_{32}O_7$ 372.458	Constit. of Urtica dioica	Effects on anti-serum antibodies positive on the Fas/Fas-Lapoptosis pathway in the testis tissue and testicular germ cells of pubertal male rates.	 [38]
10	Neoolivil	$C_{20}H_{24}O_7$ 376.405	Constit of thymus longiflorus and urtica dioica.	Effects on anti-serum antibodies positive on the Fas/Fas-Lapoptosis pathway in the testis tissue and testicular germ cells of pubertal male rates.	 [39]
11	Neoolivil; 9-Ac, 4-O-B-D-glucopyranoside	$C_{28}H_{36}O_{13}$ 580.585	Constit. of Urtica dioica	Adsorption of hexavalent chromium from aqueous solutions by biochars obtained during biomass paralysis.	 [40]

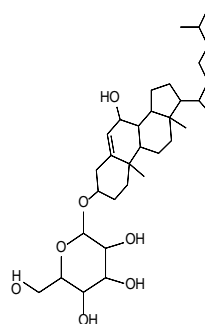
12	Neoolivil;9,9-Di-Ac,4-O-B-D-glucopyranoside.	$C_{30}H_{38}O_1$ 4 622.622	Constit.of Urtica dioica	Effect of bio-charcoal on release of carbon dioxide in soil. Influence of in ovo prebiotic and symbiotic administration on meat quality of broiler chickens.		[41]
13	Neoolivil,4-O-B-D-glucopyranoside.	$C_{26}H_{34}O_1$ 2 538.547	Constit.of swertia japonica and Urtica dioica	<b>Enzymes sensitive pro drugs with enhanced penetration into cells aromatic</b>		[40]
14	Neoolivil,9-O-B-D-glucopyranoside.	$C_{26}H_{34}O_1$ 2 538.547	Constit.of osmanthus fragrans var.aurantiacus and Urtica dioica.	For the treatment of rheumatism and sciatica. Treatment of asthma, coughs, dandruff, diabetes, diarrhea, eczema, fever, gout, hemorrhoids, nose bleeds, scurvy, snakebites and tuberculosis.		[42]
15	14-Octacosanol	$C_{28}H_{58}O$ 410.766	Constit.of roots of Urtica dioica	Treatment of asthma, coughs, dandruff. As a diuretic and for the treatment of rheumatism and sciatica.		[43]
16	2,4,5,7,8-pentahydroxyflavone	$C_{17}H_{14}O_7$ 330.239	Constit.of roots of Urtica dioica.	Used treatment for diabetes, dysentery, hepatitis, febrifuge, antiinflammatory and antibiotic.		[43]



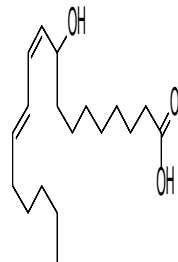
17	2.10-pinane-1,10-diol.	$C_{10}H_{18}O_2$ 70.251	Constit. of Urtica dioica roots.	Act as antibiotic. Chinese used as a medicine for therapy of ischemic necrosis of femoral head.		[44]
18	2.10-pinane-1,10-diol; 10-O-B-D-Glucopyranoside.	$C_{16}H_{28}O_7$ 332.393	Constit. of Urtica dioica.	In vitro fungal infections activities. Protective effect against apoptosis and decreased mitochondrial respiratory enzyme activities in myocardial infarcted rats.		[44]
19	9,10-pinane-1,10-diol	$C_{10}H_{18}O_2$	Constit. of Urtica dioica.	Act as anticancer. Used for the treatment of multiple myeloma, in vivo antitumor activity in human.		[45]
20	9,10-pinane-1,10-diol; 10-O-B-D-Glucopyranoside.	$C_{16}H_{28}O_7$	Constit. of Urtica dioica roots	Act as anti-bacterial agent and has anti-cancer properties.		[45]
21	2-pinene-9,10-diol	$C_{10}H_{16}O_2$ 168.235	Constit. of Urtica dioica roots	Act as anti-bacterial agent and has anti-cancer properties.		[45]
22	2-pinene-9,10-diol; 10-O-B-D-Glucopyranoside.	$C_{16}H_{26}O_7$	Constit. of Urtica dioica.	Antimicrobial and antioxidant activities. Also antiviral activity.		[45]

23	Secoisolariciresinol	$C_{26}H_{36}O_1$ 1 524.564	Isol from antidesma membranaceum, glehnia littoralis and Urtica dioica.	Act as antioxidant. In vitro incubation of venous blood.		[17]
24	Secoisolariciresinol 9-O-B-D-glucopyranoside.	$C_{26}H_{36}O_1$ 1 524.564	Constit of Berchemiarace mosa, piceaabies, pinus massoniana, pinus sylvestris [scotch pine] and Urtica dioica	Act as anti-inflammatory, Immunostimulant. Benign prostatic hyperplasia. Treatment for nose bleeding and snakebites.		[46]
25	Stigmastane-3,6-diol	$C_{29}H_{52}O_2$ 432.729	Constit of spatholobus suberetus, trichosanthes, kinlowi and urtica dioica.	Inhibitory effect of some oxygenated stigmastan-type sterols. Anti-inflammatory activity.		[47]
26	Stigmastane-5-ene-3,7-diol [3B,3Alpha,24R]; from 3-O-B-D-glucopyranoside.	$C_{35}H_{60}O_7$ 592.855	Constit. of Urtica dioica.	Has an anti-microbial activity.		[48]
27	Stigmastane-5-ene-3-ol	$C_{40}H_{68}O_1$ 0 708.971	Constit. of Urtica dioica.	Act as bioactive agent with anti-proliferation activities.		[49]

28 Stigmastane-5-ene-3,7-diol[3B,7B,24 R]; from 3-O-B-D-glucopyranoside.  $C_{35}H_{60}O_7$  592.855 Constit. of *Urtica dioica* Has an anti – microbial activity. [48]



29 9-Hydroxy-10,12-octadecadienoic acid.  $C_{18}H_{32}O_3$  296.449 Occurs in *xeranthemum annuum*, *urtica dioica* and *coriaria nepalensis*. also present in plant and animal lipids as autoxidn Impact on growth, condition index and diet composition. Used in recombinant FSH-GnRH antagonist IVF cycle. [50,51]



## 2. *Urtica incaica*

*Urtica incisa* is a Stinging Nettle as a shrub. Its stem is about 1 m tall. Its Leaves are blade shape and about 5-12 cm in size. Its stinging hairs usually present on some parts. It usually grows in disturbed areas in well-developed upland rain forest, usually most abundant in rain forests on very fertile red soils derived from recent basalt flows [52]. It is present in Peru, Australia, Ecuador, Bolivia, parts of Chile and Argentina, Coast, Sierra, and the Amazon [6,7,12] In Peru the Leaf extract of *U. incaica* locally use for the treat of rashes, joint pain and burns [15] Its extract use to treat Arthritis, liver, intestine, anti-inflammatory [2,15].



### 3. *Urtica deltoidea*

*Urtica deltoidea* is a shrub growing with many lateral and adventitious roots. The plant produces many thin branches growing up to about half a meter tall. It generally has many dead branches tangled in the living crown. It is drought-deciduous specie. The leaves are no more than 2 cm long. The branches and new leaves are coated thinly in woolly fibers. The leaves become hairless with age. Mostly grows on road sides and deserts [38]. *Urtica deltoidea* is present in New Zealand, Asia, California, Sonoran Desert, and region of North America [2,4]. In Newzland the paste of *Urtica deltoidea* is locally used to treat [16]. The leaves extract and paste both are used to treat Arthritis, antioxidant, anti-inflammatory, anti-ulcer, anticancer, antimicrobial, cardiovascular, and hepatic protective [16].



#### **4. *Urtica atrichocaulis***

*Urtica atrichocaulis* is an herb which is perennial and monoecious. Its rhizomes are woody. Its stems are simple or branched about 30.150 cm tall. Its stems, petioles, and both surfaces of leaf are blade shaped sparsely with stinging hairs, particularly on nodes. Mostly grows on valleys, along the streams and roadsides [52]. It is present in China, Japan, Korea, Guizhou, Sichuan, and Yunnan provinces, Himalayas, China's south-west and Pakistan. As far as its occurrence in Pakistan is concerned, it is found in KPK [2,4,6,7]. In China and Yunnan provinces its extract and past use locally to treat rheumatoid arthritis [18] Its aqueous extract used to treat rheumatoid arthritis, anti-inflammatory, anti-arthritis, antioxidant and immune-modulatory [2]. *Urtica atrichocaulis* is an herb which is perennial and monoecious. Its rhizomes are woody. Its stems are simple or branched about 30.150 cm tall. Its stems, petioles, and both surfaces of leaf are blade shaped sparsely with stinging hairs, particularly on nodes. Mostly grows on valleys, along the streams and roadsides [53].

It is present in China, Japan, Korea, Guizhou, Sichuan, and Yunnan provinces, Himalayas, China's south-west and Pakistan. As far as its occurrence in Pakistan is concerned, it is found in KPK [2,4,6,7]. In China and Yunnan provinces its extract and past use locally to treat rheumatoid arthritis [15]. Its aqueous extract used to treat rheumatoid arthritis, anti-inflammatory, anti-arthritis, antioxidant and immune-modulatory [2,18].



## 5. *Urtica magellanica*

*Urtica magellanica* is an herb which is perennial. Its stems are usually about 60 cm in height. The plant grows in water or it has its roots within a permanent water course. This specie mostly grows on marshes, bogs, watercourse, lake and river shores [32]. *Urtica magellanica* is present in *Urtica* In Argentina its extract and past locally use to treat allergy and arthritis [28]. Its leaves extract and paste both are used to treat Eczema, gout, *Urticaria*, allergic rhinitis and rheumatoid arthritis. While the root is used to treat benign prostatic hypertrophy [28].



## 6. *Urtica longispica*

*Urtica longispica* is a sub-shrub growing about 1.2 meters tall. Although members of the nettle family, this plant in this genus do not have stinging hairs. It mostly grows on thickets, edges of forests, along streams in hills and mountains. *Urtica longispica* is present in Ecuador [2] In Ecuador the extract of *Urtica longispica* is locally used to treat cough. Its extract and paste both are used to treat Eczema, gout, *Urticaria*, allergic rhinitis, and rheumatoid arthritis [28].



R

## 7. *Urtica aspera*

*Urtica aspera* is an herb -which is perennial and dicotyledonous. This herb is pale green to yellow green, up to 400 x 600 mm in height. Its voice is woody at base and rhizomatous. Usually this species grows on mountains, grassland, rock tors, on rock ledges or at the back of shallow rock overhangs along river flats. This species seems to prefer dry sites to wet ones though it is very shade tolerant. [54]. *Urtica aspera* is present in South Island and New Zealand [4].

In the South Island the extract of *Urtica aspera* locally use to treat stomach diseases, snakebites and as antipyretic [20]. It's inappropriate and extract both are used to treat anti-inflammatory aid for rheumatism and arthritis, hyperplasia and fungal infections [20].





### ***8. Urtica gracilentia***

*Urtica gracilentia* is an erect herb. It's lower elevation herb with opposite leaves, nearly evenly so that they dentate look like gears. The stems and pedicels are densely armed with stinging hairs. *Urtica gracilentia* is found in the shade beneath trees along streams [55]. *Urtica gracilentia* is present in Arizona, New Mexico, western Texas, northern Mexico, Central America and Iran [2, 24]. In Iran, the Leaf Inappropriate or *Urtica gracilentia* locally use to treat burns [24, 22]. Its extract and paste both are used to treat kidney diseases, diabetes, fungal infections, anti-inflammatory and [24].



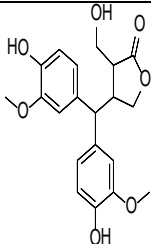
### ***9. Urtica mairiei***

*Urtica mairiei* is an herb that's perennial and monoecious. Its rhizomes are stoloniferous. Few stems are branched, up to 100 cm tall. Stems and petioles



are densely or sparsely covered with stinging hairs. When Puberulent. It mostly grows on partly shady, moist places in forests, thickets, along streams and roadsides [52]. It is present in Himalaya, southwestern China, northeastern India, Myanmar and Pakistan. As far as its occurrence in Pakistan Concerned in KPK [4,6,7]. In the Himalayas and southwestern China the extract or *U. mairei* are locally used for the treat or kidney pain. Its extract and paste used to treat kidney diseases, diabetes, fungal infections, anti-inflammatory and arthritis [15,24].



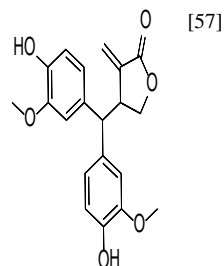
Sr no	Compound name	Mol. Formula & M. weight	Biological Source	Biological Activity	Structure	Ref#
30	4-[Bis[3,4-dihydroxy phenyl]methyl]dihydrox-3-[hydroxymethyl]-2[3H]-Furanone;from 3,4-Di-Me ether.	C <sub>20</sub> H <sub>22</sub> O <sub>7</sub> 374.136	Constit.of the roots of <i>Urtica mairei</i>	It provoked a moderate hypoglycemic activity in diabetic mice Synthesis and fungal infections activities of novel nicotinamide derivatives containing 1,3,4-oxadiazole.		[56]

31 Uricene;[-]-  
 form

$C_{20}H_{20}O_6$

Constit.of  
 roots of *Urtica*  
*mairei*.

Act as anti-  
 bacterial agent,in  
 biomaterial and  
 for treatment of  
 water.



### 10. *Urtica parviflora*

This specie has been confused with *Urtica ardens*, but that species have often shape of leaves that are ovate, blade with the surface conspicuously, wrinkled and the margin sharply. *Urtica parviflora* is partly grows on shady, moist places of evergreen forests, along streams and roadsides [52].

It is present in Himalaya [lower altitudes], India and Pakistan. As far as its occurrence in Pakistan is concerned, it is found in KPK [4,6,7]). In Himalaya [lower altitudes] and India its paste locally uses to treat arthritis [30]. Its extract is used to treat as antitumor, astringent, diuretic, inflammation and arthritis [30].



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### ***11. Urtica ardens***

*Urtica ardens* is a herb which is perennial and monoecious. Its rhizomes are woody. Stems are branched, about 150 cm tall. Its stems when turned into old then they have sparsely armed with stinging hairs. This species mostly grows on open or partly shady moist places in forests, thickets, and along the streams [52]. It is present in South Island, New Zealand, China and Pakistan. As far as its occurrence in Pakistan is concerned, it is found in Kabul valley, Swat [4,6,7,57]. In India and Garhwala Himalaya the whole plant locally uses to treat Exorcism [58]. Its extract and paste use to treat Exorcism, Jaundice, post calving care, sprains, bones fracture, hematuria, neck sore, yolk sore [15].



## ***12. Urtica pilulifera***

*Urtica pilulifera* is an annual herb growing. Its height is up to 0.6 m [2ft]. It is not frost tender. Its flowers are monoecious [individual flowers are either male or female, both can be found on the same plant. This species grows mostly on waste places. It cannot grow in the shade. It prefers moist soil. It is present in Cyprus, Sail Husban, Nauor, Jordan, Italy, Sicily, South of France, Southern Europe and Pakistan. As far as its occurrence in Pakistan is concerned, it is found in Kabal Swat valley and [4,6,7,58].

Palestinian area in the leaf extract of *Urtica pilulifera* is locally use for diabetes and skin treatment [59]. The extract and paste use for Inflammation , arthritis , internal bleeding , anemia, excessive menstruation , hemorrhoids , rheumatism , hay fever , kidney problems , pain , skin problems , abdominal pain , internal diseases , anti- asthma tic , antitumor , astringent , diuretic , antidandruff , galactogogue , depurative and anti - hyperglycemic [10,30].

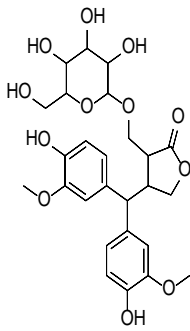
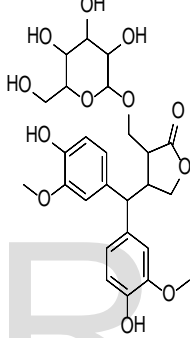


### ***13. Urtica fissa***

*Urtica fissa* has Stems that are branched and about 40.100 cm tall. Its stems and petioles are densely puberulent and covered with spreading, stinging hairs. It mostly grows on partly shady, moist places in forests, thickets, along streams and roadsides (Jiarui et al., 2003). *Urtica fissa* present in China and Asia [2,6] In China and Asia the extract of *U. fissa* is locally used to treat arthritis. Its aqueous extract is used to treat rheumatoid arthritis [2].



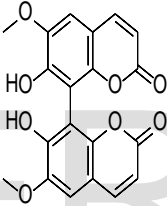
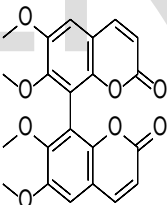


32	4-[Bis[3,4-dihydroxyphenyl]methyl]dihydrox- o-3-[hydroxymethyl]-2[3H]-Furanone[8R,8R]; from 3,4-Di-Me ether,7-O-B-D-Glucopyranoside	$C_{26}H_{32}O_{12}$ 536.532	Constit.of the roots of <i>Urtica fissa</i> .	Antioxidant activity of MS-ETOAc and several of the pure isolated were compareable to vitamin C and superior to BHT.	 <p>[60]</p>
33	4-[Bis[3,4-dihydroxyphenyl]methyl]dihydrox-3-[hydroxymethyl]-2[3H]-Furanone[8R,8S]; From 3,4-Di-Me ether,7-O-B-D-Glucopyranoside.	$C_{26}H_{32}O_{12}$ 536.532	Constit.of the roots of <i>Urtica fissa</i>	Antioxidant activity of MS-ETOAc and several of the pure isolated were compareable to vitamin C and superior to BHT	 <p>[60]</p>

#### 14. *Urtica dentate*

*Urtica dentate* is stipules free below and partially connate in upper stems. Its leaves are blade shaped and green in color. Leaves are turned into dark green when dry. Its leaves are ovate or lanceolate, there outer secondary veins often reaching teeth, base broadly rounded. It mostly grows on moist places in forests, thickets and along the streams [52]. It is present in North America [4]. In North America the aqueous extract of *U. dentate* locally use against kidney problems Its aqueous extract use to treat rheumatoid arthritis, kidney stones, anit-lithic effects [2,23].



34	6,6,7,7-tetrahydroxy-[8,8-bi-2H-1-benzopyran]-2,2-dione-6,6-Di Me ether	C <sub>20</sub> H <sub>14</sub> O <sub>8</sub> 382.326	Constit.of Erycibe obusifolia and urtica dentata.	Used as functional food and act as dietary anti-oxidant. Also has anti-fungal effect.		30
35	6,6,7,7-tetrahydroxy-[8,8-bi-2H-1-benzopyran]-2,2-dione; Tetra-Me ether	C <sub>22</sub> H <sub>18</sub> O <sub>8</sub> 410.379	Constit.of Urtica dentata.	Act as anti-malaria agent. also Inhibitor of endothelial cell proliferation.		Seikel, et al.1966

## 15. *Urtica sondenii*

*Urtica sondenii* is herbs which is perennial, dioecious and rarely monoecious. Its rhizomes are woody. Its stems are simple or few branched, about 40.100 cm tall. Its stems and petioles often densely or sometimes sparsely covered with stinging hairs. This specie mostly grows on moist places in forests, thickets, grasslands and stream banks [52].

It is present in northeastern Europe, northern Asia, Nordic countries and Russia [6,7]. In Nordic countries the Paste of *U. sondenii* locally use to treat skin

problems [24]. Its extract and paste used to treat kidney diseases, diabetes, fungal infections, anti-inflammatory and arthritis [15,24].



### ***16. Urtica taiwaniana***

*Urtica taiwaniana* is an herb which is perennial and monoecious. Its rhizomes are woody. Its stems are simple or Branchen Shortly, about 30.80 cm tall. Its stems are sparsely contains stinging hairs hirtellous and its arms. This specie grows mostly on thickets, along the streams, mountain and roadsides [52]. It is present in Taiwan, Indonesia [4,6] . In Taiwan against its use locally hypotensive extract [16]Its extract is used to treat Anti hyperglycemic,



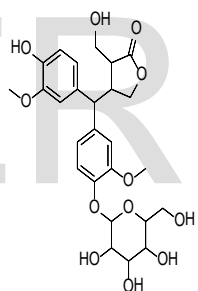
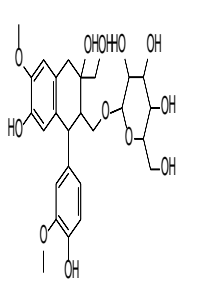
antioxidant, protective hepatica, Antivira, diuretic and hypotensive [16].

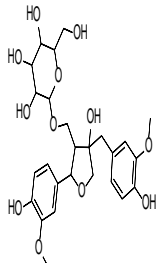
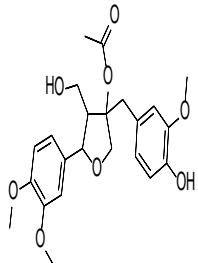
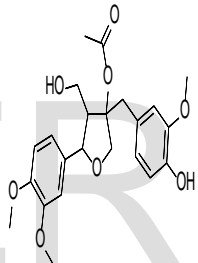
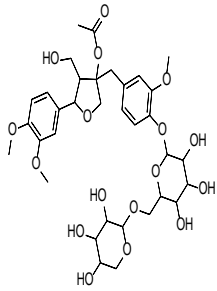
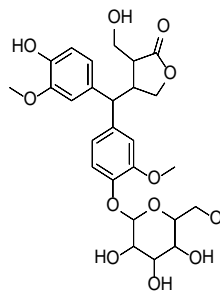


### ***17. Urtica triangularis***

*Urtica triangularis* is an herb which is perennial and monoecious. Its rhizomes are woody, about 1 cm in diameter. Its purplish and Branchen Stems are light, about 60,150 cm tall. Its stems and petioles are sparsely contains stinging hairs hirtellous and its arms. It grows mostly on thickets, meadows, along the streams, VALLEYS, roadsides and near villages [52]It is present in New Zealand, Australia [6]. In Japan both extract and paste of *U. triangularis* use locally to treat arthritis [23]. Its extract use to treat ulcer.



- |    |   |                                     |  |   |  |      |
|----|---|-------------------------------------|--|---|--|------|
| 36 | 4-[Bis[3,4-dihydroxy phenyl]methyl]dihydroxy-3-[hydroxymethyl]-2[3H]-Furanone[8R,8R]; from 3,4-Di-Me ether,4-O-B-D-Glucopyranoside. | $C_{26}H_{32}O_{12}$<br><br>536.189 | Constit. of the roots of Urtica Triangularis | Result on the brine shrimp lethality bioassay it can be well predicted that the crude exts. Have considerable cytotoxic potency. As anti-ulcerogenic natural products |   | [62] |
| 37 | Cycloolivil;9-O-B-D-Glucopyranoside   | $C_{26}H_{34}O_{12}$<br><br>538.547 | Constit. of the roots of Urtica Triangularis | In manuf. of deodorization type bio-solid fuel products, the degree of adhesion of the activated carbon powder for deodorization of a bio-solid fuel product.         |  | [63] |

38	3,3,4,4,8,9-Hexadihydroxy-7,9-epoxyignan from 3,3-Di-Me ether,9,O-B-D-Glucopyranoside.	$C_{26}H_{34}O_{12}$ 538.547	Constit.of the roots of Urtica Triangular is	<b>Glucose oxidase from <i>Aspergillus niger</i>: production, characterization and immobilization for glucose oxidation</b>		[31]
39	3,3,4,4,8,9-Hexadihydroxy-7,9-epoxyignan from 3,3,4-tri-Me ether,8-Ac.	$C_{23}H_{28}O_8$ 432.469	Constit.of the roots of Urtica Triangular is	It is a stimulant an appetite suppressant and a topical anesthetic. Biologically, cocaine acts as a serotonin-norepinephrine-dopamine reuptake inhibitor.		[31]
39	3,3,4,4,8,9-Hexadihydroxy-7,9-epoxyignan from 3,3,4-tri-Me ether,8-Ac.	$C_{23}H_{28}O_8$	Constit.of the roots of Urtica Triangular is	It is a stimulant an appetite suppressant and a topical anesthetic. Biologically, cocaine acts as a serotonin-norepinephrine-dopamine reuptake inhibitor.		[31]
40	3,3,4,4,8,9-Hexadihydroxy-7,9-epoxyignan from 3,3,4-Tri-Me ether,8-Ac,4-o-[alpha-arabino-pyranosyl-[1-6]B-D-Glucopyranoside]	$C_{34}H_{46}O_{17}$ 726.727	Constit. of the roots of Urtica Triangularis	Used for treatment of viral hepatitis and protection of the liver. Also act as tumor-inhibiting.		[31]
41	4-[Bis[3,4-dihydroxy phenyl]methyl]dihydro-3-[hydroxymethyl]-2[3H]-Furanone[8R,8S]; from 3,4-Di-Me ether,4-O-B-D-Glucopyranoside.	$C_{26}H_{32}O_{12}$ 536.532	Constit.of the roots of Urtica Triangular is	Result on the brine shrimp lethality bioassay it can be well predicted that the crude exts. Have considerable cytotoxic potency. As antiulcerogeni		[62]

## **18. *Urtica australis***

*Urtica australis* which is a semi - deciduous shrub and dicotyledonous forming compact bushes up to 1 x 1 m long. Its stems have stinging hairs. Its color is dark green leaves. It grows mostly on open ground amongst scrub and grasses, and also cobble beaches and sand dunes [63,64]. It is present in South Island, New Zealand, background sub Antarctic islands and Asia [2]. In the South Island the Extract of *Urtica australis* use locally to treat skin diseases [15]. The extract of this specie use to treat kidney problems, diabetes, eczema, fungal infections, antiinflammatory, and arthritis [15].



## **19. *Urtica laetevirens***

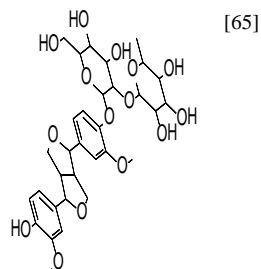
*Urtica laetevirens* is free stipules below and partially connate in upper stems. Its color is green leaves. Its leaves are ovate or lanceolate, shaped blade, there often Reaching Veinsan secondary outer teeth and broadly rounded base. It

grows mostly on moist places in forests, thickets and along the streams [52]. It is present in Tibet, Asia, Mongolia, Japan, Manchuria [2,6,7]. In Tibet the extract of *U. laetevirens* against use locally allergic reaction [2]. Its aqueous extract used to treat rheumatoid arthritis, rheumatism, eczema, allergic rhinitis ([2]. Many compounds have been from the reported such as *U. laetevirens* neoolivil, secoisolariciresinol, isolariciresinol and pinoresinol, or terpene diols.

The compounds were isolated from *Urtica dioica* were by conventional LC separation, Ultra performance liquid chromatography [UPLC] techniques. However, LC - MS and [LC - ESI - MS] have also been employed for the isolation and characterization as well.



42	Pinoresinol	$C_{32}H_{42}O_{15}$	Constit of urtica laetevirens and the root bark of hibiscus syriacus.	Act as fungal infections agent.Medicine as an analgesic,antivirus,a nti-inflammatory.
		666.675		



## 20. *Urtica massaica*



*Urtica laetevirens* is an herb which is perennial. This plant forming loose clumps of few-branched stems from a creeping rhizome. The stems grow up to 2 meters long and are covered with stinging hairs. It mostly grows on mountains, forests, near human habitation and around cattle [66]. It is present in Africa [4]. In Africa the paste of *Urtica massaica* is used to treat skin rashes and anti-malaria [15]. The paste of this specie use to treat eczema, Skin rashes, dermatitis and diuretic [10,15].



R

## ***21. Urtica ferox***

*Urtica ferox* is a large shrub stinging which is dicotyledonous. Its stems are up to 3m tall. Sometimes there are extensive thickets, bearing pairs of thin pointed sharply toothed leaves on a long stem. Young parts covered in white needles that inject a painful toxin. Flowers and fruit are grown in short tiny spikes at the base of the leaves. Its leaves are pale green in color. This specie is found mostly in coastal and lowland forest margins and shrub lands [67]. It is present in New Zealand and Australia [6,7]. In New Zealand the extract is used to treat skin problems [20]. The paste of this specie is used to treat Anti -

hyperglycemic, antioxidant, protective hepatica , Antiviral , diuretic , hypotensive and anti - aggregate [20].



## **22. *Urtica hyperborea***

*Urtica hyperborea* is a herb which is perennial and monoecious or dioecious. Its rhizomes are woody and thick. Its stems are pale brownish and purplish in color. Stems are simple or branched, cylindric basally and about 10.50 cm tall. Its stems are also sparsely puberulent and densely armed with stinging hairs and its internodes are compact [52]. It is present in Peru, high plateaus of the Black Sea, Himalaya from Pakistan to Bhutan, Mongolia and Tibet, high altitudes and Pakistan. As far as its occurrence in Pakistan is concerned, it is found in Kabul valley and Swat [6,7]. In Peru its extract locally use against skin rashes (Its extract and paste use to treat Skin rashes, dermatitis and eczema, diuretic [10]).



### **23. *Urtica andicola***

*Urtica andicola* stinging is a large Shrub which is dicotyledonous. Its stems are up to 2cm long. Its flowers and fruit are grown in short spikes at base of leaves. Its leaves are pale green in color. This specie mostly found in forest, along road sides and along the streams [68]. In Peru and paste the extract of *Urtica andicola* locally is used to treat arthritis. [24]. Its use to treat extract as anti-hyperglycemic, antioxidant, hepatic protective, antiviral, diuretic, hypotensive and anti- aggregate [24].



### **24. *Urtica flabellate***

*Urtica flabellate* is an annual or perennial herb. Its leaves are covered with light green foliage [13]. Its stems Contain stinging hairs. Its stem is cut about 2m. It grows mostly on moist, shady places and forests [69]. It is present in



Peru, Colombia, Ecuador, Bolivia and Argentina [4,13]. In Peru Both the extract of *Urtica flabellate* locally and paste used to treat arthritis. [25]. Its extract and paste both are used to treat anti- hyperglycemic, antioxidant, antiviral and protective hepatic [25].



### **25. *Urtica stachyoides***

*Urtica* is an flabellate Which is perennial herb. Its stem is cut about 3m. Its stem is covered with stinging hairs. Its leaves are light green in color. It grows mostly on moist places, forests and along the streams [70]. It is present in Spain [Tenerife]. In Spain the extract of *Urtica stachyoides* locally diuretic used to treat problems Its extract and paste both are used to treat as anti-hyperglycemic, antioxidant, hepatic protective, antiviral, diuretic, hypotensive and anti- aggregate.



### **26. *Urtica lalibertadensis***

*Urtica lalibertadensis* is a subshrub or erect perennial herb. It has basally slightly lignified rhizome. Its stem is about 3m tall. Its stem contains numerous deflexed stinging hairs. Its leaves are opposite, interpetiolar and its stipules are united. It mostly grows along the roads, along the streams and shady places ([71]. In Peru the extract of *Urtica lalibertadensis* locally use to treat liver diseases [26]. Its extract is used to treat as anti-hyperglycemic, antioxidant, hepatic protective and antiviral [26].



### **27. *Urtica atrovirens***

*Urtica atrovirens* is an herb and perennial which is monocious. Its rhizome is woody. Its stem is about 30-80 cm cut. Its stem contains stinging hairs. It

grows mostly on road sides, along the streams and moist places [72]. It is present in Italy and Western Mediterranean [6,7]. In the Western Mediterranean Paste of *Urtica atrovirens* use locally to treat [10]. Its extract and paste both are used to treat as anti- hyperglycemic, antioxidant, hepatic protective, antiviral and arthritis [10].



## 28. *Urtica kioviensis*

*Urtica atrovirens* is an herb and perennial which is monocious. Its stem is cut about 2m. The whole plant, especially the leaves, is characterized by shining a light green appearance, and the basal part of the stem is creeping and rooting at the lower nodes. Its stems have stinging hairs [30]. It is present in Germany, Britain, France, the Netherlands, Eastern Europe [6,7]. In Eastern Europe and the extract paste both are locally used to treat arthritis [30]. Its extract and paste both are used to treat hepatic protective, antiviral and arthritis.



### **29. *Urtica leptophylla***

*Urtica is an leptophylla* which is perennial herb. Its rhizome is slightly lignified with stinging numerous hairs. Its stem is cut about 2m. Its leaves are stating and its opposite are united in pairs. It grows mostly on road sides, along the streams and forests [71]. It is present in Peru, eastern North America from Nova Scotiato Florida [6]. In Peru the extract and paste both are locally used to treat arthritis [2]. Its extract and paste both are used to treat arthritis, fungal infections and antimicrobial [2].



### **30. *Urtica urens***

*Urtica urens* is an annual herb. Its stems are branched about 10.60 cm cut. Its stems are sparsely puberulent and densely armed with stinging Somewhat Hairs. Its internodes are 4.7 cm lower and upper internodes are 1.3 cm in length. This specie grows mostly on forest margins, roadsides, near villages and China [52]. It is present in Peru, Europe, Highland, Asia, China, Italy, Aegean, North America and Pakistan. As far as Pakistan is Concerned STIs in this case, it is found in Kaki, Swat [2,6,7].In Palestinian area leaf extract of *U. urens* use locally for skin treatment [59]. Its extract paste and used to treat arthritis [2]. A wide range of metabolites' have reported from *U. urens*,

including flavonoids and Caffeic acid analogues have also isolated from *U. urens* Bees. Apart from these aromatic compounds, pentacyclic triterpenoids and oxygenated fatty acids have been found in *U. urens* roots.



## Conclusion

The leaf paste and extract has been known in traditional medicine for a long period of time. Recent studies have shown it to display different biological activity of some of them to prove that use for ethnopharmacological purposes. Several varieties of genus *Urtica* has been widely used for the treatment of rheumatism and sciatica, asthma, coughs, dandruff, diabetes, diarrhea, eczema, fever, gout, hemorrhoids, nose bleeds, scurvy, snakebites and other tuberculosis related problems treated traditionally. Experiments have shown that *Urtica* genus also exhibit antiinflammatory, immunomodulatory as well as antioxidant activities, all of which contribute towards the protection of joints. Traditional use in bile disorders has also been documented. This review of current research on *Urtica* genus further knowledge of the basic information. In vitro and in vivo studies have provided a simple model which uses various ethnopharmacological biological scientific explanation.

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