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PHYTOCHEMICAL STUDIES ON *RUELLIA TUBEROSA*: A REVIEW

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ABSTRACT

Ruellia tuberosa is a perennial herb belongs to family *acanthaceae*. Pharmacological study by different workers on this plant proved Its antioxidant, antimicrobial, anticancer, gastroprotective, antinociceptive, and anti-inflammatory activities. Alkaloids, benzoxazinoids, flavonoids, lignans, phenolic compounds, triterpenoids, sterols have been isolated from this plant. This paper presents a review on compounds isolated from *Ruellia tuberosa* along with its medicinal properties.

KEY WORDS

Ruellia tuberosa

INTRODUCTION:

Ruellia tuberosa belongs to family *Acanthaceae* (Acanthus family) which is a large family of about 250 genera mostly found in hot countries, tropical and subtropical regions of the world, and also found in Mediterranean regions, Australia and USA.[1-4]It is an perennial herb up to 60–70 cm tall and is a native of Central America, introduced into Indian garden as ornament. *R. tuberosa* is commonly known as "Cracker plant" [5–7]. In folk medicine, it has been used as diuretic, antipyretic, antidiabetic, antidote, thirst-quenching agent and analgesic and anti-hypertensive activity[8-9]. In Siddha system of medicine, leaves are given with liquid copal as remedy for gonorrhoea and ear diseases [10].It is also used in stomach cancer[11] .Dried and ground roots in dose of two ounces cause abortion and also used in sore eyes[12] . The herb exhibits emetic activity and employed substitute of ipecac, also used in bladder stones and decoction of leaves used in treatment of Bronchitis[13]. In Suriname's traditional medicine system, it is used as anthelmintic and in management of joint pain and strained muscles. *Ruellia tuberosa* is used as cooling in urinary problem and uterine fibroids [14-15] . It has recently been incorporated as a component in a herbal drink in Taiwan[16]. Pharmacological study by different workers on this plant proved Its antioxidant[17] , antimicrobial [18], anticancer[19] , gastroprotective activity [20], antinociceptive, and anti-inflammatory activity [21]. This paper presents a review on compounds isolated from *Ruellia tuberosa* along with its medicinal properties.

Compounds Isolated:

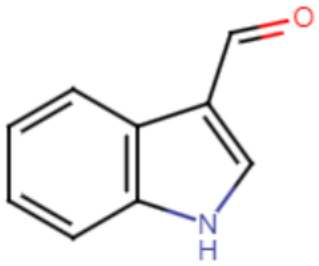
The chemical constituents of *Ruellia tuberosa* includes alkaloids, benzoxazinoids, flavonoids, lignans, megastigmanes, phenolic compounds, Phenyl ethanoids, steroids, triterpenoids, and others. Their structures, **1-43** are given below in **Fig.-1** and their names along with references are listed in **Table-1**.

Table-1: Isolates of *Ruellia tuberosa*

Class of compound	Name	Ref	Structure No.
Alkaloid	Indole-3-carboxaldehyde	22	1
Benzoxazinoids	DIBOA-Glc	25	2
Flavonoids	Cirsimaritin	22	3
	Cirsimarin		4
	Cirsilioi-4′-glucoside		5
	Sorbifolin		6
	Pedalitin		7
	Luteoline-7-o-glucoside	23	8
	Apegenin -7-o-glucoside		9
	Apegenin -7-o-glucoronide		10
	Apegenin -7-o-rutinoside		11
	Hispidulin 7-O-β-D-glucuronopyranoside	24	12
	Comanthoside B		13
	Hispidulin 7-O-α-L-rhamnopyranosyl-(1'''→2'')-O- β -D-glucuronopyranoside		14
	Pectolinaringenin 7 - O- α – L -rhamnopyranosyl-(1'''→2'')-O- β -D-glucuronopyranoside		15
	Nepetin7-O-β-D-glucopyranoside	25	16
	Demethoxycentaureidin 7-O-β-D-glucopyranoside		17
	Pectolinarigenin 7-O- β-D-glucopyranoside		18
Lignans	(−)-Lyoniresinol 3α-O-β-D-glucopyranoside	25	19
	3-hydroxy-1-(4-hydroxy-3-methoxyphenyl)-2-[4-(3-hydroxy-1-(E)-propenyl)-2-methoxyphenoxy] propyl-β-D-glucopyranoside		20
	Syringaresinol 4,4'-O-bis-β-D-glucopyranoside.		21
Megastigmanes	(6S,9R)-Roseoside	25	22
Phenolic compounds	Syringin	25	23
Phenyl ethanoids	Acteoside	24, 25	24
	Isoacteoside	24	25
	Nuomioside		26
	Isonuomioside		27
	Forsythoside B		28
	Paucifloside		29
	Cassifolioside		30
	Isocassifolioside		31
	Cistanoside F		32
steroid	b- sitosterol	26, 27	33
	b- sitosterol glucoside	25	34
	Stigmasterol	26, 27	35
	campesterol		36
triterpene	Lupeol	27	37
	Betulin	22	38
	21-Methyldammer-22-ene-3b-,18,27- triol	28	39
Others	Tritriacontan-6-one	29	40
	5-Hydroxytetratriacontan-9-one		41

	n-Tritriacontane		42
	Vanillic acid	22	43

Fig.-1



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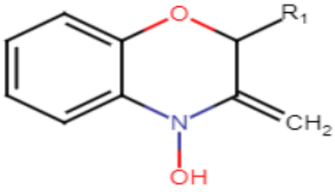
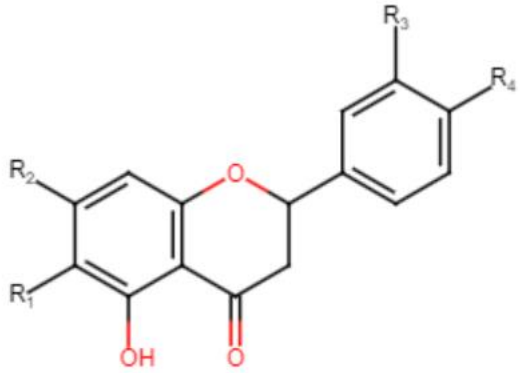
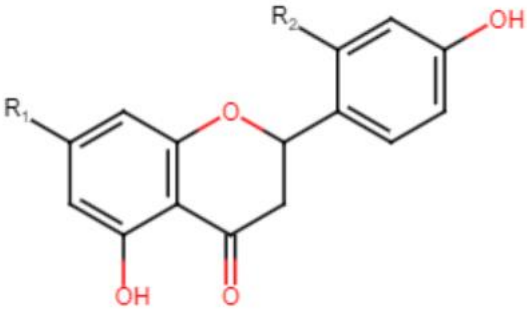


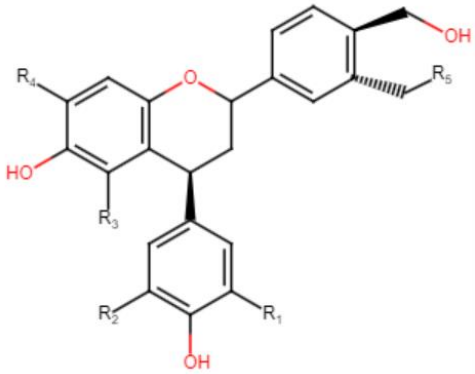
2 R_1=OGlc



Str.	R1	R2	R3	R4
3	OMe	OMe	H	OH
4	OMe	OMe	H	OGlc
5	OMe	OMe	OH	OGlc
6	OH	OMe	H	OH
7	OH	OMe	OH	OH
8	H	OGlc	OH	OH
12	OMe	OGlcA	H	OH
13	OMe	OGlcA	H	OMe
14	OMe	$OGlcA^{2-}$ Rha	H	OH
15	OMe	$OGlcA^{2-}$ Rha	H	OMe
16	OMe	OGlc	OH	OH
17	OMe	OGlc	OH	OMe
18	OMe	OGlc	H	OMe



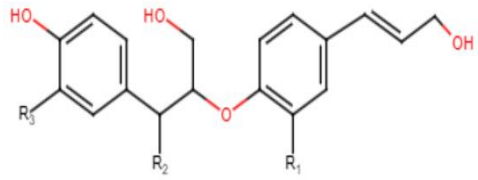
Str. No.	R1	R2
9	Glc	H
10	GlcA	H
11	Rut	H



19

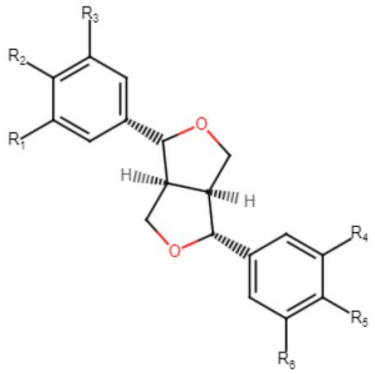
R1 R2 R3 R4 = OMe

R5 = OGlc



20 R1 R3= OMe, R2= OGlc

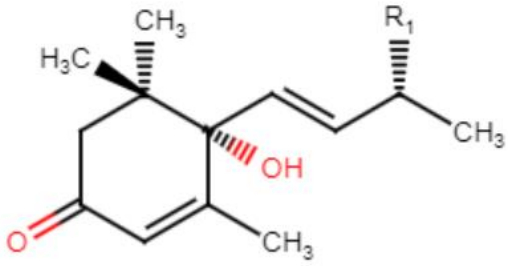
21



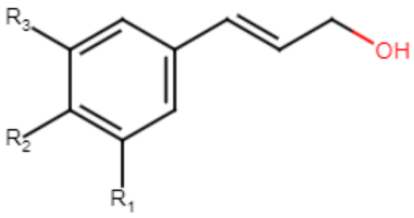
R1 R3 R6 = OMe

R2 R5 = OGlc

22 R1 =OGlc



23 R1 R3 OMe, R2 OGlc



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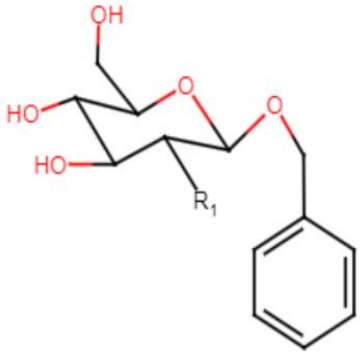
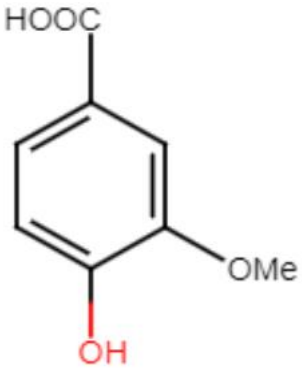


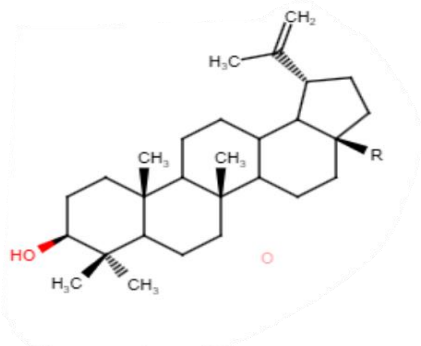


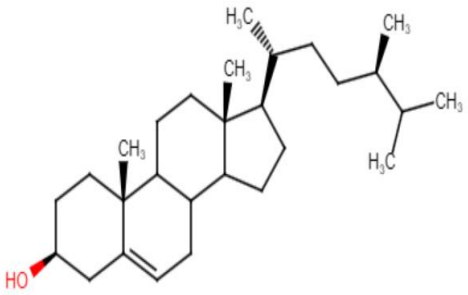
32 R1=OXyl

R

37 CH_3

38 CH_2OH





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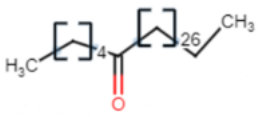

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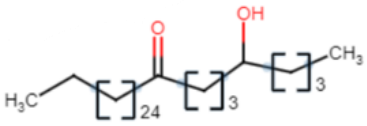

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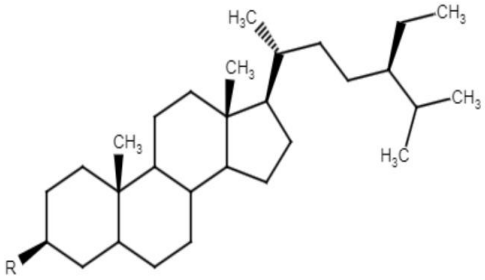
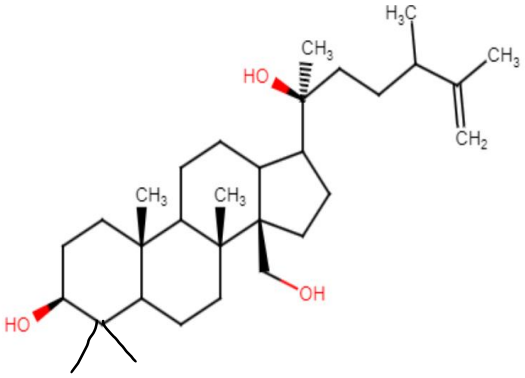
41



33 R =OH
34 R=OGlc
35 R= OH, nine, twenty-two dien



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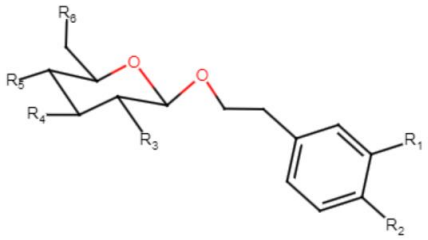

	R1	R2	R3	R4	R5	R6
24	OH	OH	OH	ORha	OH	Caffeoyl
25	OH	OH	OH	OApi	OH	Caffeoyl
26	OH	OH	OH	OApi	Caffeoyl	OH
27	OH	OH	OH	ORha	Caffeoyl	OApi
28	OH	OH	OH	OApi	O Caffeoyl	OApi
29	OH	OH	ORha	ORha	O Caffeoyl	OH
30	OH	OH	ORha	ORha	OH	OCaffeoyl
31	OMe	OH	OH	ORha	OH	OH

Conflict of Interests: No

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