MINI REVIEW

RECORDS OF PHARMACEUTICAL AND BIOMEDICAL SCIENCES

A Mini Review on Phytochemical Constituents and Biological Activities of *Colvillea racemosa*

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Abstract

Fabaceae, is the third-largest family in the plant kingdom. it has been divided into six subfamilies (Caesalpinioideae, Dialioideae, Detarioideae, Cercidoideae, Duparquetioideae, and Papilionoideae). It has a diverse contribution including 727 genera and 19.327 species The Caesalpinioideae subfamily comprises approximately 171 genera and 2250 species of tropical, sub-tropical trees and shrubs. The Caesalpinieae tribe is one of the largest archaic tribes of the subfamily Caesalpinioideae, family Fabaceae. including several valuable popular ornamental and medicinal genera one of them being *Colvillea*

Colvillea is a genus belonging to the family Fabaceae, it includes only one species (racemosa). *Colvillea racemosa* is an ornamental plant due to its orange cone flowers that growing in Madagascar, Australia, and some tropical countries Especially, in lowland forest and savannah areas. The species is listed as "Least Concern" on the IUCN red list. Chemical and biological studies on *Colvillea racemosa* to date are fairly limited. This study to illustrate all previous work on different parts of *Colvillea racemosa*.

Keywords: *Colvillea racemosa*; Fabaceae; Flavonoids.

1. Introduction:

Colvillea is the genus, named for Sir Charles Colville, an ex-governor of Mauritius, It includes only one species (racemosa). *Colvillea racemosa* is an ornamental plant native to Madagascar, Australia and some tropical countries **(Babineau & Bruneau, 2017)**. According to the NCBI Taxonomy browser and **(El-Nashar *et al.*, 2015)**, the classification of *Colvillea racemosa* leaves is shown in **Table (1)**.

Table 1: plant profile of Colvillea racemosa leaves.

Classification	
Kingdom	Plantae
Phylum	Tracheophyta
Class	Magnoliopside
Subclass	Rosidae
Order	Fabales
Family	Fabaceae
Subfamily	Caesalpinioideae
Genus	*Colvillea*
Species	*racemosa*

2. Chemical Constituents reported for *Colvillea racemosa*:

2.1. Coumarin:

The first compound isolated from *Colvillea racemosa* is 6-methoxy-7-hydroxy bis coumarin from seeds **(Sreenath & Rao, 2000)** listed in **Table (2)**.

2.2. Phenolic acids:

HPLC analysis of leaves showed presence of chlorogenic, gallic acid, vanillic acid, gallic acid, cinnamic acid, rosmarinic acid, tyrosol, catechol, protocatchuic, ferulic acid, *p*-coumaric, ellagic acid, syringic acid, and 3,4,5 trimethoxy-cinnamic **(Shafei, 2016)** listed in **Table (2)**.

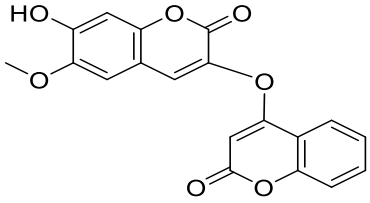
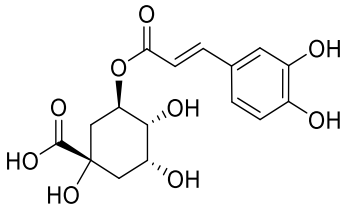
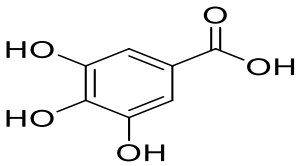
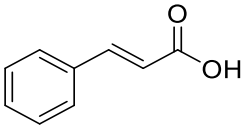
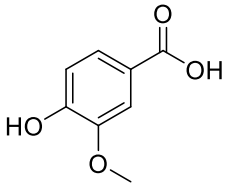
2.3. Flavonoids:

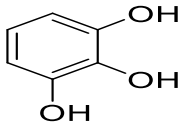
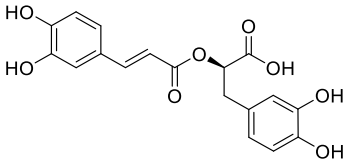
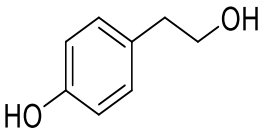
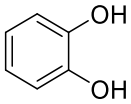
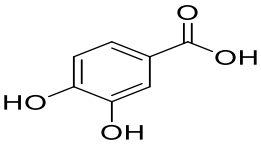
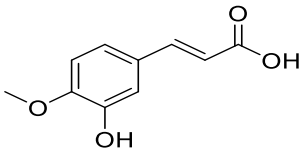
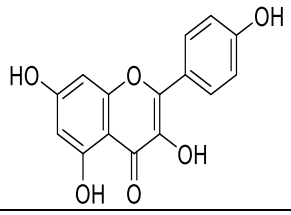
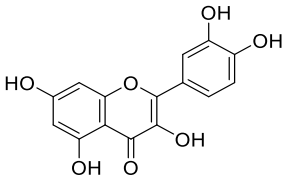
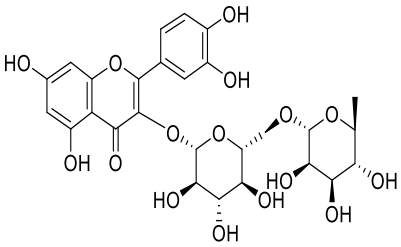
HPLC analysis of leaves showed flavonoids (kaempferol, quercetin, rutin, quercetrin, hesperidin, naringenin, naringin, hesperetin, catechin, and epicatechin) **(Shafei, 2016)** while, flavonoids isolated from stems were vicenin-2, vitexin, isovitexin, R-liquiritigenin, fisetin, genkwanin, S-naringenin, kaempferol, R, R-aromadendrin,2S-7,3,5trihydroxyflavanone, isoliquiritigenin and *α,β*-dihydroxy dihydrochalcones, colveol A and colveol B (**Mohamed *et al*., 2018**) is listed in **Table (2)**.

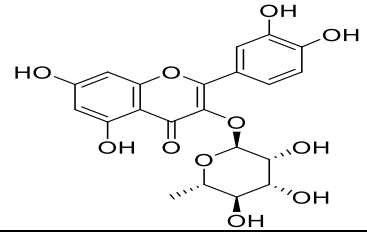
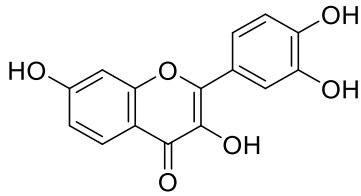
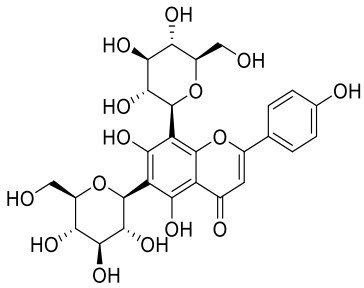
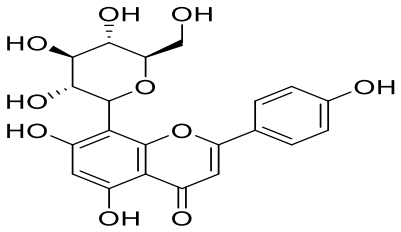
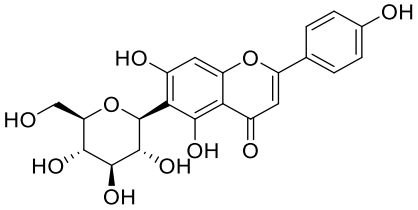
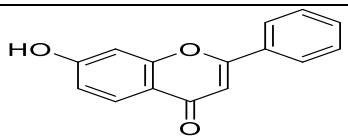
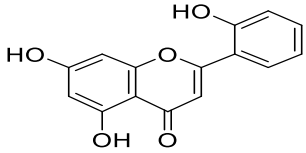
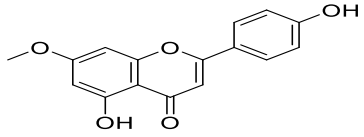
2.4. Triterpenes:

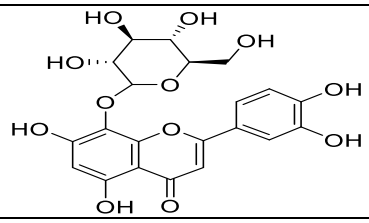
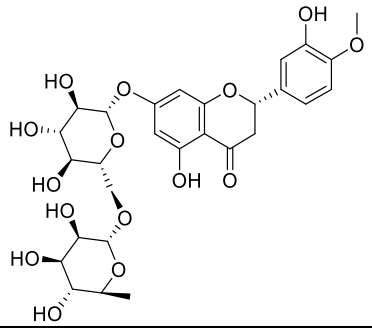
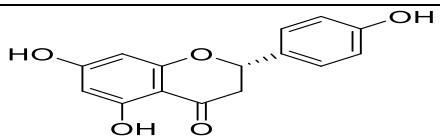
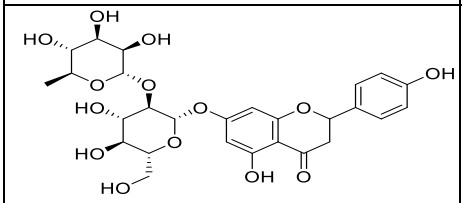
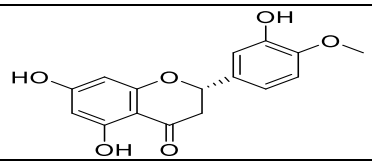
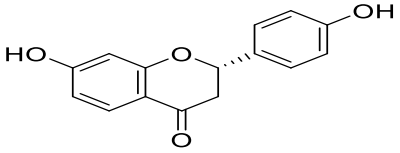
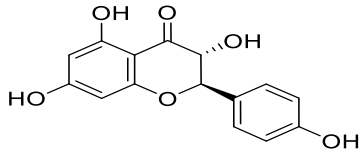
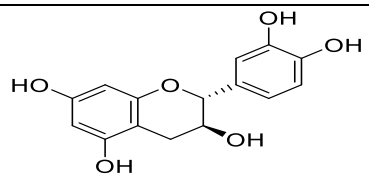
also, the isolated lupeol, lup-20(29)-ene from stems **(Mohamed *et al*., 2018)** listed in **Table (2)**.

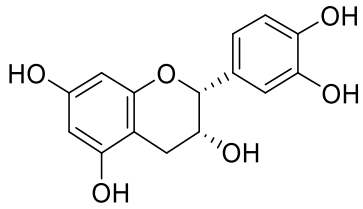
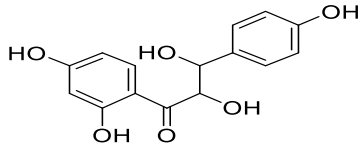
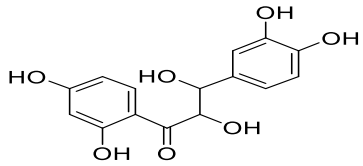
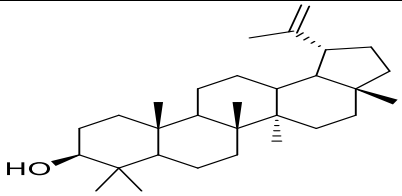
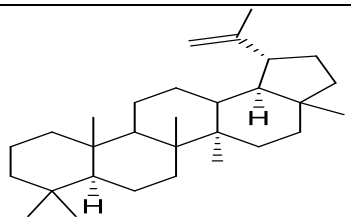
Table 2: Some chemical constituents reported in *Colvillea racemosa*

Structure	Name	part used	Reference
2.1. Coumarin			
	**6-methoxy-7-hydroxy biscoumarin**	Seeds	**(Sreenath & Rao, 2000)**
2.2. Phenolic acids			
	**Chlorogenic acid**	Leaves	**(Shafei, 2016)**
	**Gallic acid**	Leaves	**(Shafei, 2016)**
	**Cinnamic acid**	Leaves	**(Shafei, 2016)**
	**Vanillic acid**	Leaves	**(Shafei, 2016)**

	**Pyrogallol**	Leaves	**(Shafei, 2016)**
	**Rosmarinic acid**	Leaves	**(Shafei, 2016)**
	**Tyrosol**	Leaves	**(Shafei, 2016)**
	**Catechol**	Leaves	**(Shafei, 2016)**
	**Protocatchuic**	Leaves	**(Shafei, 2016)**
	**Ferulic acid**	leaves	**(Shafei, 2016)**
2.3. Flavonoids			
2.3.1. Flavonol			
	**Kaempferol**	Leaves and stems	**(Shafei, 2016;Mohamed *et al.*, 2018)**
	**Quercetin**	Leaves	**(Shafei, 2016)**
	**Rutin**	Leaves	**(Shafei, 2016)**

	**Quercitrin**		
	**Fisetin**	Stem	**(Mohamed *et al*., 2018)**
2.3.2. Flavone			
	**vicenin-2**	Stems	**(Mohamed *et al*., 2018)**
	**vitexin**	Stems	
	**isovitexin**		**(Mohamed *et al*., 2018)**
	**7-OH flavone**	Leaves	**(Shafei, 2016)**
	**2S-7,3′,5′-trihydroxyflavanone**	Stems	**(Mohamed *et al*., 2018)**
	**Genkwanin**		

	**Orientin**		
2.3.3. Flavanone			
	**Hesperidin**	Leaves	**(Shafei, 2016)**
	**Naringenin**	Leaves	**(Shafei, 2016)**
	**Naringin**		
	**Hesperetin**		
	**R-liquiritigenin**	Stems	**(Mohamed *et al*., 2018)**
2.3.4. Flavanonol			
	**R,R-aromadendrin**	Stems	**(Mohamed *et al*., 2018)**
2.3.5. Flavan-3-ol			
	**Catechin**	Leaves.	**(Shafei, 2016)**

	**Epicatechin**	Leaves	**(Shafei, 2016)**
2.3.6. Other related flavonoids			
	**Colveol A**	Stems	**(Mohamed *et al*., 2018)**
	**Colveol B**		
2.4. Terpenes			
	**lupeol**	Stems	**(Mohamed *et al*., 2018)**
	**lup-20(29)-ene**		**(Mohamed *et al*., 2018)**

3. Biological activities reported for *Colvillea racemosa*

3.1. Anti-microbial activity:

Acetone extract of *Colvillea racemosa* showed a significant activity the against organism *E. coli* **(Ravikumar & Rathinam, 2009)**. Also, the acetone extract of *Colvillea racemosa* showed significant inhibitory effect against *Staphylococcus aureus, Bacillus subtilis, Klebsiella pneumonia, Salmonella typhimurium, Aspergillus fumigatus, Penicillium italcum, Syncephalastrum racemosum* and *Candida albicans* **(Shafei, 2016).**

3.2. Cytotoxicity:

The alcoholic, ethyl acetate, and acetone extracts of *Colvillea racemosa* leaves showed cytotoxic activity against the colon carcinoma cell line (HCT-116) (Shafei, 2016).

3.3. Antioxidant

The alcoholic extract of *Colvillea racemosa* leaves showed antioxidant activity compared to ascorbic acid **(Shafei, 2016).**

3.4. Neuro activity:

Also., ethanolic extract of stems showed significant inhibition on human MAO-A and -B **(Mohamed et al., 2018).**

3.5. Antidiabetic

The leaves of *Colvilllea racemosa* showed significant inhibition against *α*-amylase, and *α*-glucosidase, improving pancreatic functions and diabetes complications**(Abd El Hafeez *et al*., 2022).**

4. Conclusion:

Colvillea racemosa is a valuable plant that needed more biological investigation, we just briefly reviewed it for biological activity and chemical constituents.

5. Conflict of interest:

The authors report no declaration of conflict of interest

6. References:

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