



ANTIMICROBIAL ACTIVITY AND SECONDARIES METABOLITES FROM THE LEAVES EXTRACTS OF *Bersama engleriana* GÜRKE (MELIANTHACEAE)

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Background: Infectious diseases caused by bacteria constitute one of the major causes of morbidity and mortality throughout Africa and particularly in Cameroon. Thus, the evaluation of bio-activity of the chemical composition of plants traditionally used for the treatment of these infectious diseases is of great importance.

Objectives: This study aim is to evaluate the antimicrobial activity of extract and to isolate the chemical constituents of the leaves of *Bersama engleriana* Gürke (Melianthaceae).

Material and Methods:

Leaves of *Bersama engleriana* collected in Badenkop were shade dried and crushed. Maceration of the powder (1 kg) using acetone and methanol successfully during 4 hours gave crude acetone and MeOH extracts .

Phytochemical screening were carried out on these extracts, theirs polyphenols and flavonoids contents using the following equations:

Total phenolic contents

$$PT = \left(\frac{y - b}{a} \right) \cdot \left(\frac{V_2}{m \times V_1} \right)$$

Total flavonoids contents

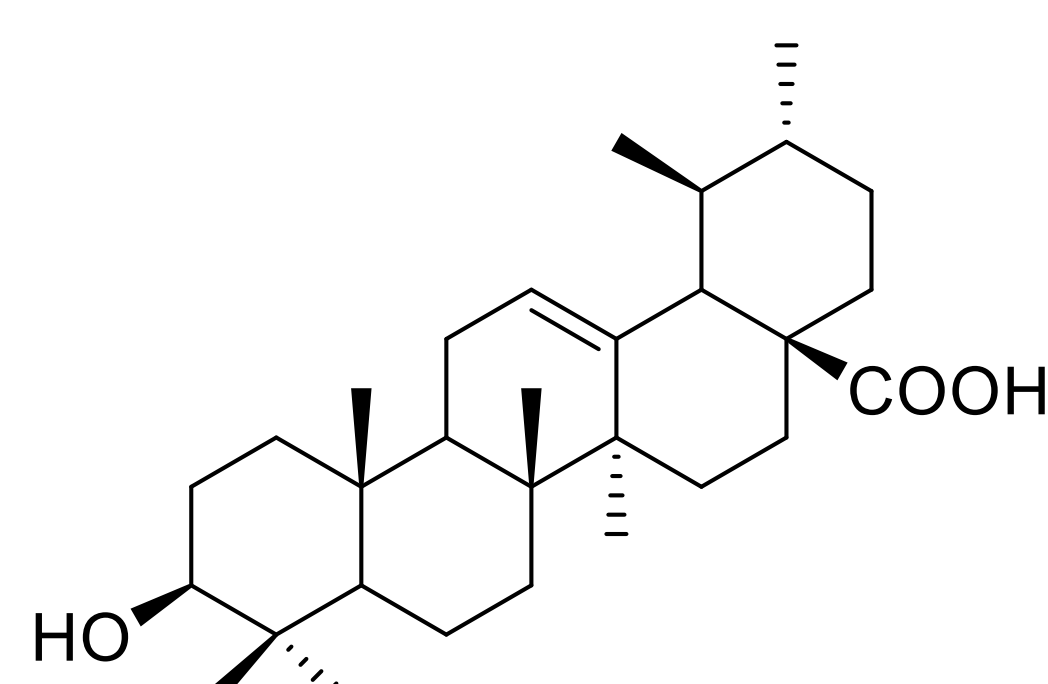
$$F = \frac{0,05 \times A_{\text{ext}}}{A_T C_{\text{ext}}}$$

Acetone extract was then fractioned on a silica gel column chromatography.

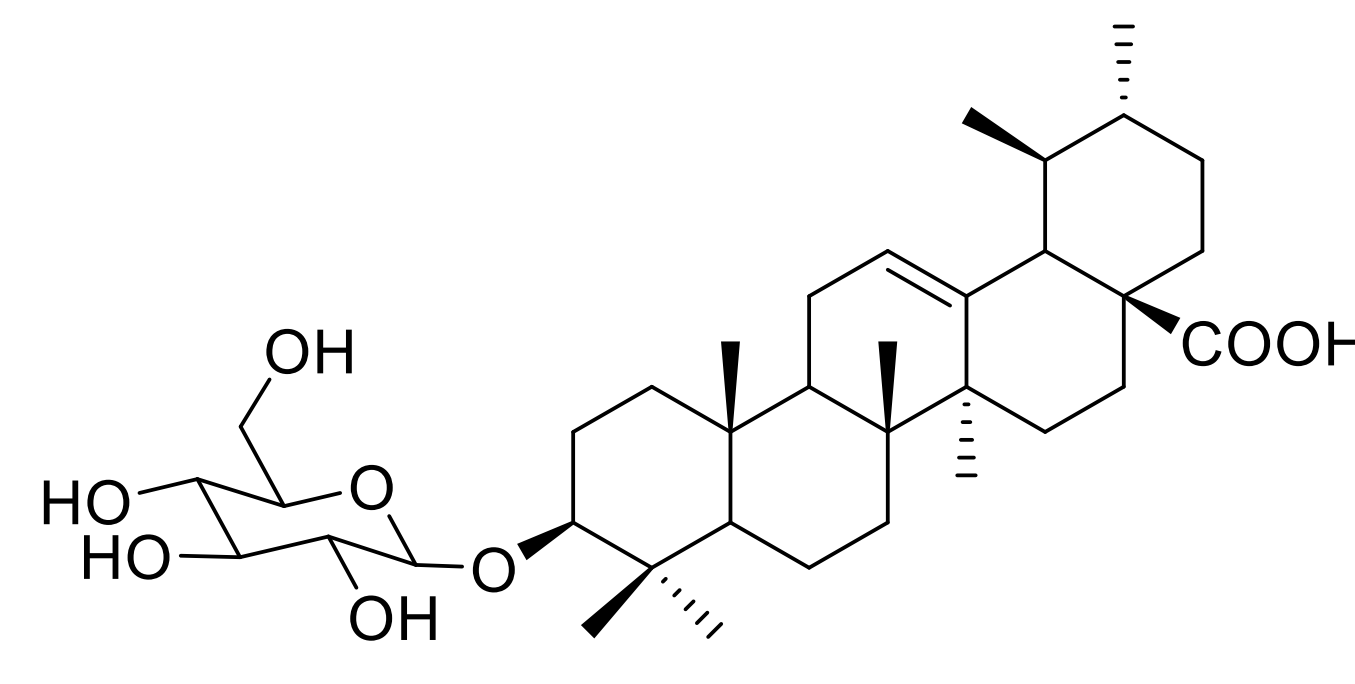
Thirteen compounds were isolated and characterized using MS, 1D and 2D NMR data.

The antimicrobial activities were evaluated using the micro-dilution method and the diameter of inhibition of extracts and compounds on gram positive and negative bacteria were measured according to the method develop by Clinical and Laboratory Standards Institute (CLSI).

Structure of some triterpenes isolates and flavonoid



3-β-hydroxyurs-12-en-28-oic acid (BE1)



3-β-glycoside ursolic acid (BE2)

Table 2: ¹H (600 MHz, DMSO) and ¹³C NMR Data of the novel apigenin derivative

	I		II		III	
N°	δ _H (ppm), mult (J in Hz)	δ _C , mult	δ _H (ppm), mult (J in Hz)	δ _C , mult	δ _H (ppm), mult (J in Hz)	δ _C , mult
2		164.4		165.8		165.1
3	6.67 (1H, s)	104.7	6.74 (1H, s)	103.7	6.63 (1H, s)	103.4
4	C=O	182.8	C=O	183.2	C=O	183.2
5	13.15 (OH)	162.8	13.15 (OH)	151.8	13.15 (OH)	162.0
6	6.15 (1H, s)	99.6	-	126.1	6.42 (1H, s)	99.2
7	OH	164.9	OCH ₃	159.3	OH	163.3
8	6.42 (1H, s)	94.7	6.96 (1H, s)	92.5		153.3
9		158.6		155.4		156.1
10		104.9		106.2		104.8
1'		125.4		122.3		122.4
2'	7.91 (1H, dd, J= 6 Hz)	129.0	7.91 (1H, dd, J= 6 Hz)	129.3	7.44 (1H, dd, J= 12 Hz)	128.7
3'	6.98 (1H, d, J= 12 Hz)	116.0	6.91 (1H, d, J= 6 Hz)	116.7	6.71 (1H, d, J= 12 Hz)	116.5
4'	-	161.8	-	162.4		161.9
5'	6.98 (1H, d, J= 12 Hz)	116.0	6.91 (1H, d, J= 6 Hz)	116.7	6.71 (1H, d, J= 12 Hz)	116.5
6'	7.91 (1H, dd, J= 6 Hz)	129.0	7.91 (1H, dd, J= 6 Hz)	129.3	7.44 (1H, dd, J= 12 Hz)	128.7
			3.85 (3H, s)	57.1		

Conclusion: The results show that the leaves of *B. engleriana* are rich in phenolic compounds and have good antimicrobial activities. Hence the importance of preserving it and popularizing it with populations for their well being.

References:

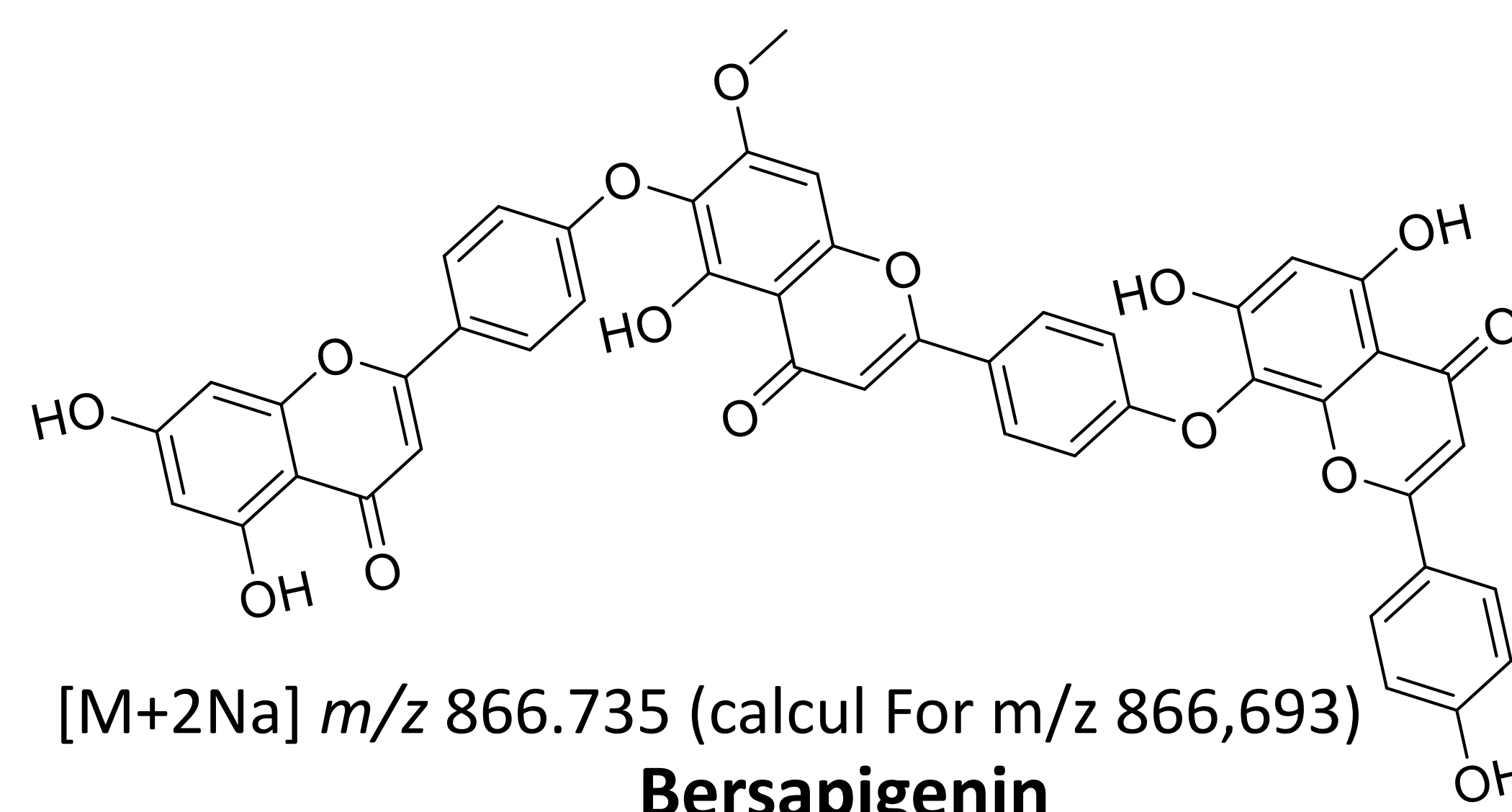
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Results:

Table 1: Results of the *antimicrobial activities, total polyphenols and flavonoids contents*

Extracts/ compound	Concentr.	Diameter of Inhibiton (mm)			Total Polyphenols (mg AG/g Ex)	Total Flavonoids (mg Ru/g Ex)
		<i>S. aureus</i>	<i>C. per- fringens</i>	<i>E. coli</i>		
Acetone	25 mg/mL	16.7 ± 0.6	17.5 ± 3.5	13.5 ± 0.7	1.41 ± 0.73	34.65 ± 0.20
Methanol		14.4 ± 0.6	14.0 ± 1.4	20.0 ± 0.6	1.26 ± 0.65	/
BE1	1 mg/mL	16.0 ± 2.8	/	11.5 ± 0.7	-	-
BE2		15.0 ± 1.4	10.5 ± 0.7	9.5 ± 0.7	-	-
Chloramphenicol	30 µg/disc	34.4 ± 1.7	8.0 ± 0.5	23.7 ± 4.5	-	-

/: no active, ≤ 8 mm no sensitive, 9 et 14 mm sensitive, 15 et 19 mm high sensitive, ≥ 20 mm extremely sensitive (Lawal et al., 2017). (-) not measured



[M+2Na] m/z 866.735 (calcul For m/z 866,693)

Bersapigenin

Acknowledgement & Financial support:

·(DAAD) Yaounde-Bielefeld (YaBiNaPA); IFS;
·*University of Yaounde 1 and University of Ngaoundere*

