



POSTER
ID: 7429

A new phenanthrene derivative from *Entada abyssinica* with antimicrobial Property

Larissa M. Magnibou*¹, Peron B. Leutcha², Billy T. Tchegnitegni³, Abel J. G. Yaya¹, Maurice F. Tagatsing⁴, Celine Henoumont⁵, Sophie Laurent⁵, Emmanuel Talla¹

^{*1} Department of Chemistry, Faculty of Science, University of Ngaoundéré, P. O. Box 454, Ngaoundéré, Cameroon, E-mail: larissamagnibou.90@gmail.com

² Department of Chemistry, Faculty of Science, University of Maroua, P. O. Box 55, Maroua, Cameroon, E-mail: peron.leutcha@gmail.com (P.B. Leutcha)

³ Department of Chemistry, Faculty of Science, University of Dschang, P. O. Box 67, Dschang, Cameroon, E-mail: billytousse@yahoo.fr

⁴ Department of Organic Chemistry, Faculty of Science, University of Yaoundé I, P. O.Box 812, 4124, Yaoundé, Cameroon,

¹ Department of Chemistry, Faculty of Science, University of Ngaoundéré, P. O. Box 454, Ngaoundéré, Cameroon, E-mail: tallae2000@yahoo.fr (E. Talla)

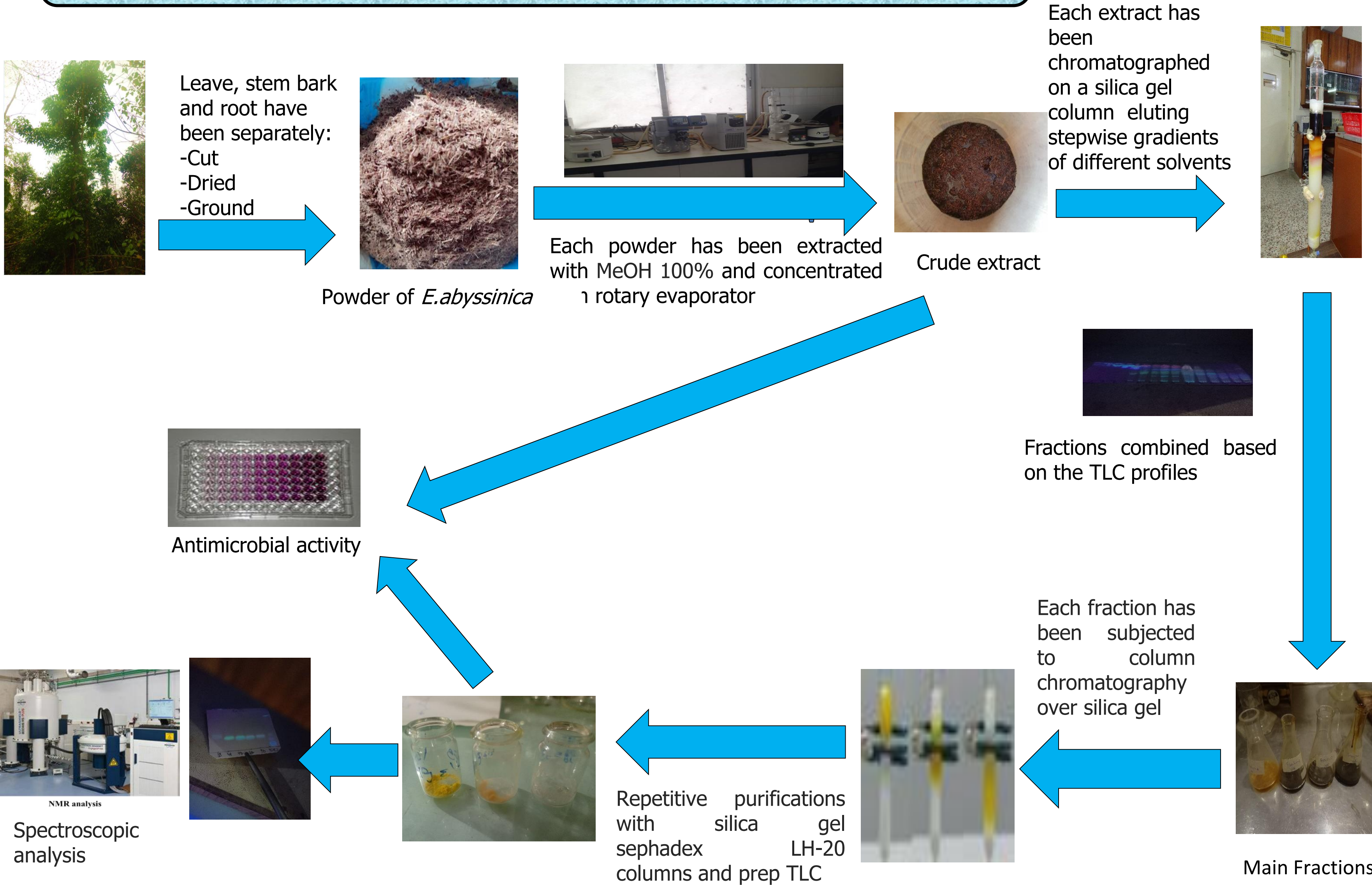
⁵ Department of General, Organic and Biomedical Chemistry, Faculty of Medicine and Pharmacy, University of Mons, Belgium, Avenue Maistriau, 19 B-7000, Mons, Belgium

Email Address: larissamagnibou@yahoo.fr/larissamagnibou.90@gmail.com

INTRODUCTION

Infectious diseases are disorders caused by micro-organisms such as bacteria, viruses, fungi or parasites. Skin infections are very common throughout the world and vary from one region to another. Some skin infections can be attributed to poor hygienic conditions, which may be more prevalent in developing countries. It has been reported to make up to 42–65% of the total skin morbidity of children [1]. Health care systems around the world are faced with the challenge that bacteria are developing resistance to existing antimicrobial agents resulting in an increase in health care costs, morbidity and also mortality [2]. The aim of this work is to isolate compounds with antimicrobial activity from *E. abyssinica* that can justify its use in folk medicine to treat skin diseases.

METHODOLOGY



RESULTS AND DISCUSSION

Chemical studies of the MeOH fraction of the root of *A. abyssinica* using column chromatography of different subfractions led to the isolation of 16 compounds among which one new phenanthrene, phenentada (**1**) together with the known (8 S, 13 E)-kolavic acid 15-methyl ester (**2**), 8 S-kolavic acid 15-methyl ester (**3**), 8 S-kolavic acid 18-methyl ester (**4**), 13,14,15,16-tetranorclerod-3-ene-12,18-dioic acid (**5**), 1',26'-bis-[(S)-2,3-dihydroxypropyl] hexacosanedioate (**6**), campesterol (**7**), *B*-sitosterol-3-O- β -D-glucopyranoside (**8**), 24-hydroxytormentic acid (**9**), 2,3-dihydroxypropyl-24'-hydroxyltetraacosanoate (**10**), sucrose (**11**), 6-dihydroxy-2-(4-hydroxyphenyl)chroma-4-one (**12**), 7-*O* [α -rhamnopyranosy-(1-6)- α -glucopyranosyl]-5,7-dihydroxy-4'-methoxy-4'-methoxyflavonone (**13**), entadamide (**14**), chondrillasterol (**15**) and oleanolic acid (**16**), (**Fig 1**). Their structures were elucidated mainly by extensive spectroscopic analysis (1D and 2D NMR), HRESI-MS and chemical methods.

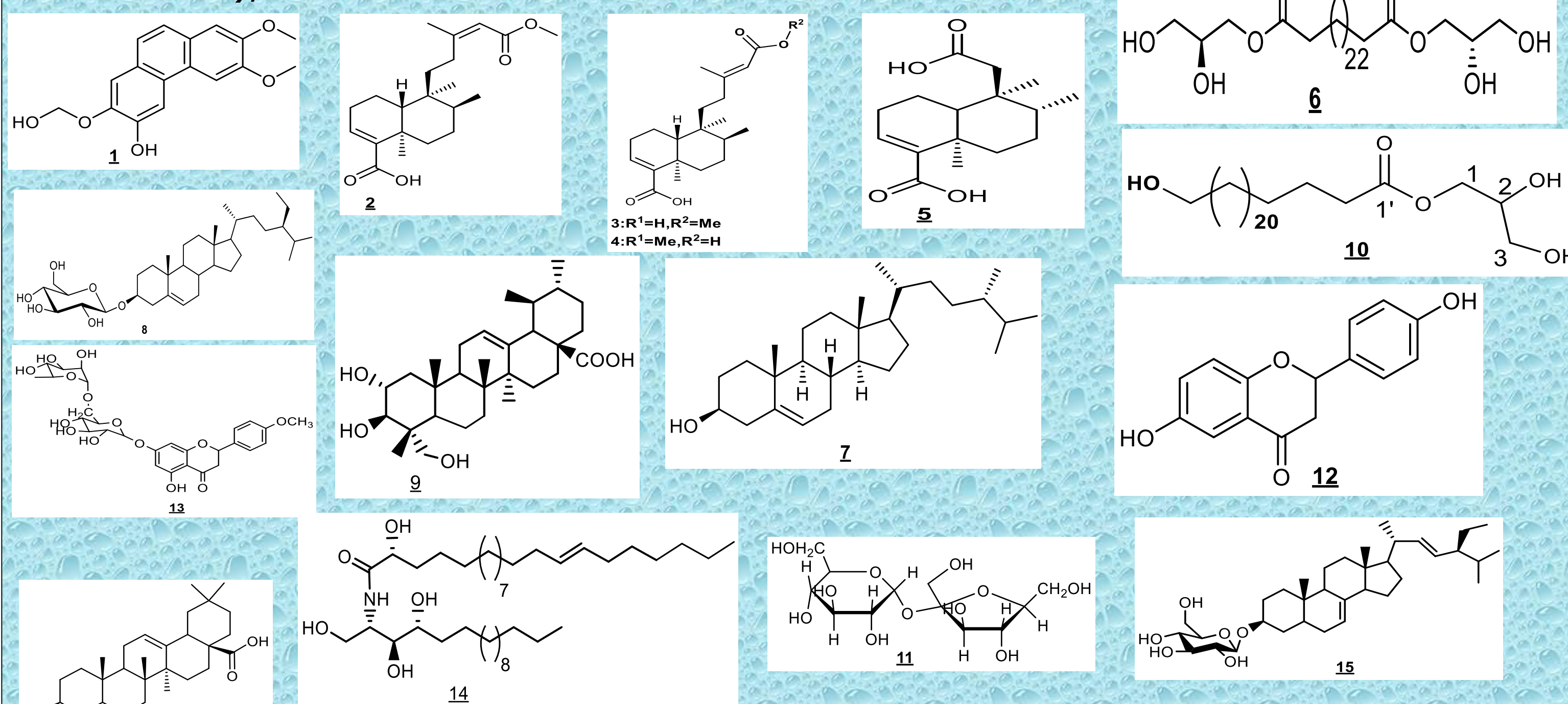


Fig 1: Isolated compounds from the MeOH extract of *A. abyssinica*

DE GRUYTER
Larissa M. Magnibou*, Peron B. Leutcha, Billy T. Tchegnitegni, Steven C. N. Wouamba, Cyrille Y. F. F. Magne, Abel J. G. Yaya, Theodora Kopa, Maurice F. Tagatsing, Nantenaina Tombozara, Alain L. Melli, Celine Henoumont, Sophie Laurent and Emmanuel Talla
A new phenanthrene derivative from *Entada abyssinica* with antimicrobial and antioxidant properties
Z. Naturforsch. 2021; aop

REFERENCES

1. Mohammed R. S. A. Ph.D. Thesis, Erasmus University at Rotterdam, Rotterdam, 2007.
2. Souza M. V. N. Fitoterapia 2009, 80, 453–460.
3. Kuete V. Planta Med 2010, 76, 1479–1491.

Table 1. Antimicrobial activity of some isolated compounds and extracts from *Entada abyssinica*

Samples	Microbial strains													
	<i>C.albicans</i>		<i>C.parasilosis</i>		<i>S.epidermidis</i>		<i>P.aeruginosa</i>		<i>E.coli</i>		<i>S.tyhi</i>		<i>S.enterica</i>	
	MIC and MBC (µg/ml)													
	MIC	MB C	MIC	MBC	MIC	MBC	MIC	MB C	MIC	MB C	MIC	MBC	MIC	MB C
Compounds														
1	3.12	6.25	12.5	25	1.56	3.12	3.12	6.25	3.12	6.25	6.25	12.5	3.12	6.25
Mixture 2/3	6.25	12.5	3.12	6.25	0.78	1.56	6.25	12.5	12.5	25	12.5	25	12.5	ND
3	/	/	/	/	1.56	6.25	/	/	/	/	/	/	/	/
4	6.25	12.5	3.12	12.5	1.56	6.25	3.12	6.25	12.5	ND	6.25	12.5	6.25	12.5
5	12.5	25	3.12	6.25	1.56	3.25	12.5	25	1.56	6.25	6.25	12.5	12.5	ND
6	12.5	25	3.12	6.25	1.56	6.25	6.25	12.5	12.5	25	12.5	25	3.12	12.5
Crude extracts														
Eab	62.5	125	31.25	62.5	62.5	125	15.6	62.5	62.5	ND	62.5	125	15.62	62.5
Ear	15.62	31.25	31.25	62.5	7.81	15.6	15.6	ND	15.62	ND	31.2	ND	ND	ND
positif Control														
Ciproflaxacin	—	—	—	—	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
Fluconazole	0.78	0.78	0.78	1.56	—	—	—	—	—	—	—	—	—	—

CONCLUSION

Antimicrobial activity of crude extracts and some isolated compounds have been evaluated and exhibited potent antimicrobial activity *in vitro*. These results are in accordance with the use of *E. abyssinica* in folk medicine to treat skin diseases of fungal origin. The isolated compounds could be further investigated for their potential use in the treatment of microbial infection.

ACKNOWLEDGMENTS

The authors are thankful to the University of Ngaoundéré for providing some consumables. The NMR and Molecular Imaging Laboratory at University of Mons, Belgium for the NMR analysis of different samples.

Scheme 1 : Steps for the isolation, characterization and biological assay of isolated compounds

Eab : *Entada abyssinica* bark ;
Ear : *Entada abyssinica* root; /: MIC > 125 μ g/mL, —: Not tested, ND not determined;
Significant (MIC < 10 μ g/mL),
moderate (10 < MIC < 100 μ g/mL), low (MIC > 100 μ g/mL). (**Kuete et al 2010**)

Green color means a moderate activity and Red significant activity, see **Reference:** ciprofloxacin and fluconazole (MIC: 0.78 – 1.56 μ g/mL).