Pharmacogn Res. 2022;14(4):442-445
A Multifaceted Journal in the field of Natural Products and Pharmacognosy
www.phcogres.com | www.phcog.net

Original Article

A New Cytotoxic Ceramide from *Dalbergia boehmii* Taub. Stem Bark

Jean Pierre Abdou[1,2,*], Jean Noël Nyemb[3,*], Jean Momeni[1], Atikou Fadimatou[1], Abel Joël Yaya Gbaweng[1], Jean Paul Tsopmejio[4], Guidawa Fawa[5], Muhammad I. Choudhary[6]

ABSTRACT

Background: *Dalbergia boehmii* (Leguminosae), is a medicinal plant used in the Northen part of Cameroon, against digestive tract diseases and fever. **Objectives:** This work which is part of the search for bioactive molecules through natural products, aimed to isolate, characterize and evaluate the cytotoxicity of compounds from *D. boehmii*. **Materials and Methods:** Chemical investigations were carrying out on stem barks of *Dalbergia boehmii* using chromatographic techniques. Structures elucidation of isolated compounds were done using 1D and 2D NMR as well as EI-MS and literature data. Some isolated compounds were evaluated *in vitro* against MCF-7 cell lines for their cytotoxicity activity, using the MTT colorimetric method. **Results:** The chemical investigation leaded to the isolation of a new ceramide derivative named Dalbergiamide (1), a triterpene identified as olean-12-ene-3,11-dione (2) isolated here for the first time from *Dalbergia* genus, along with two known compounds, glucoside 3-*O*-β-D-sitosterol (3) and glucoside 3-*O*-β-D-stigmasterol (4). Compounds 1 and 2 were found to be cytotoxic at 50 µM with IC_{50} value of 17.13 µM and 35.52 ± 2.95 µM respectively. **Conclusion:** These promising results suggested more in-depth studies should be carried out on this plant in order to assess its potential in the fight against cancer.

Keywords: *Dalbergia boehmii*, Natural products, Cytotoxicity, MCF-7.

Jean Pierre Abdou[1,2,*], Jean Noël Nyemb[3,*], Jean Momeni[1], Atikou Fadimatou[1], Abel Joël Yaya Gbaweng[1], Jean Paul Tsopmejio[4], Guidawa Fawa[5], Muhammad I. Choudhary[6]

[1]Department of Chemistry, Faculty of Science, University of Ngaoundere, Ngaoundere 454, CAMEROON.
[2]Centre for Research on Medicinal Plants and Traditional Medicine, Institute of Medical Research and Medicinal Plants Studies, Yaounde, CAMEROON.
[3]Department of Refining and Petrochemistry, National Advanced School of Mines and Petroleum Industries, University of Maroua, Kaele, CAMEROON.
[4]Department of Organic Chemistry, Faculty of Science, University of Yaounde 1, Yaounde, CAMEROON.
[5]Department of Biological Science, Faculty of Science, University of Ngaoundere, Ngaoundere, CAMEROON.
[6]H. E. J. Research Institute of Chemistry, International Center for Chemical and Biological Sciences (ICCBS), University of Karachi, Karachi, PAKISTAN.

Correspondence

Dr. Jean Noël Nyemb
Department of Refining and Petrochemistry, National Advanced School of Mines and Petroleum Industries, University of Maroua, P.O. Box 08 Kaele, CAMEROON.
Email id: nyembjeannoel@gmail.com
ORCID iD: 0000-0001-5069-6737

Dr. Jean Pierre Abdou
Department of Chemistry, Faculty of Science, University of Ngaoundere, Ngaoundere 454, CAMEROON.
Email id: abdoujeanpierre1@yahoo.fr
ORCID iD: 0000-0002-8940-6079

History
- Submission Date: 19-07-2022;
- Review completed: 29-08-2022;
- Accepted Date: 05-09-2022.

DOI : 10.5530/pres.14.4.64

Article Available online
https://www.phcogres.com/v14/i4

INTRODUCTION

Dalbergia species belonging to Leguminosae family, is very appreciated in wood crafts because of the variety of pigmented colors of their wood, are also valued for their use in traditional medicine.[1] *Dalbergia* species are also known to possess several pharmacological activities including antiplasmodial, anti-inflammatory, analgesic, antimicrobial, antioxidant, antiulcerogenic, antipyretic, anti-seizure, cytotoxic and cancer chemopreventive activities.[2-4] Phytochemical studies showed that plants from *Dalbergia* genus contain various classes of compounds as phenolic compounds, stibenes, terpenoids, glycosides, miscellaneous, ...etc.[5,6]

As part of our continued screening program of Cameroon medicinal plant constituents especially *Dalbergia boehmii*, we carried out investigation on the stem barks. *Dalbergia boehmii* which is known as *Ngalayhi* in *Fulfulde* in the Northen Cameroon, is a small to medium-sized deciduous tree or a shrub, used traditionally to treat digestive tract diseases and fever.[6,7] Previous chemical investigation carried on leaves and hearthwood of *D. boehmii* leaded to the isolation of thirteen phenolic compounds, mostly isoflavonoids and stilbenes.[6] Further to this, the phytochemical study of the stem barks gave four compounds including a new ceramide named dalbergiamide, a triterpene: olean-12-ene-3,11-dione and two phytosterols: glucoside 3-*O*-β-D-sitosterol and glucoside 3-*O*-β-D-stigmasterol. Antiproliferative activity against the human breast cancer cell lines (MCF-7) of some isolated compounds has been evaluated.

Experimental Section

General experimental procedures

^{1}H NMR and ^{13}C NMR spectra were recorded on a Bruker AM 400 (600) and AMX 500 NMR (Avance) spectrometer respectively at 500 MHz and 125 MHz using pyridine-d_5 and $CDCl_3$ as solvents. JEOL JMS-600H spectrometer was used for EI-MS spectra recording; TMS was used as internal standard and chemical shifts are in ppm. Silica gel was used for column chromatography (CC) monitored by TLC on alumina precoated silica gel sheets ($60F_{254}$). Spots were visualized using UV lamp (254 and 386 nm) followed by spraying ceric sulphate solution and heating at 105°C.

Plant material

Identificated by Dr Tsabang Nole in Touboro in the North region of Cameroon, stem barks of *Dalbergia boehmii* were collected in September 2012, and

Cite this article: Abdou JP, Nyemb JN, Momeni J, Fadimatou A, Gbaweng AJY, Tsopmejio JP, Fawa G, Choudhary MI. A New Cytotoxic Ceramide from *Dalbergia boehmii* Taub. Stem Bark. Pharmacog Res. 2022;14(4):442-5.

authentificated at the Cameroon National Herbarium where a Voucher specimen (66887/HNC) has been deposited.

Extraction and purification

The pulverized barks (3 kg) was macerated in 9 L of a mixture of CH_2Cl_2/MeOH (1:1) at room temperature, to give after filtration and solvent evaporation under reduced pressure 159.7 g of a brown crude extract. Silica gel column chromatography (CC) of 150.0 g of this crude extract using a gradient of Hexane-EtOAc (1→0 to 0→1) then EtOAc-MeOH (1→0 to 0→1) was performed. 210 fractions were collected and pooled according to their TLC profiles leading nine fractions (A-I). The purification of A (6.0 g) on silica gel CC furnished 15.0 mg of compound 2 using a mixture of Hexane-EtOAc (9:1) as eluent. Fraction I (8.0 g) was also subjected to CC of silica gel eluted with EtOAc (100%) yielding 20.0 mg of a mixture of compound 3 and 4 while fraction B furnished compound 1 (2.0 mg) when eluted with Hexane- EtOAc (8:2).

***Dalbergiamide* (1):** White amorphous powder; m.p. 129-131°C; EI-MS: *m/z* 667.2 calculated for $C_{41}H_{81}O_5N$. ^{1}H-NMR (500 MHz, Pyr-*d5*): δ_H 0.87 (6H, t, 6.9, H-21, H-20′), 1.20-1.34 (52H, m, H-7-20; H-4′-13′ and H-18′-19′), 1.70 (2H, m, H-6), 1.92 (1H, m, H-5b), 1.98 (2H, m, H-14′), 2.03 (1H, m, H-3′b), 2.16 (2H, m, H-17′), 2.22 (1H, m, H-3′a), 2.26 (1H, m, H-5b), 4.29 (1H, m, H-4), 4.36 (1H, m, H-3), 4.42 (1H, m, H-1a), 4.51 (1H, m, H-1b), 4.61 (1H, dd; 10.4; 6.5, H-2′), 5.12 (1H, m, H-2), 5.49 (1H, m, H-16′), 5.54 (1H, m, H-15′), 6.21 (brs, OH-4), 6.68 (2H, brs, OH-1 and OH-3), 7.60 (brs, OH-2′), 8.57 (1H, d, 9.0, NH). ^{13}C-NMR (75 MHz, Pyr-*d5*): δ_C 14.3 (C-21, C-20′), 22.9 (C-20, C-19′), 25.8 (C-6), 26.7 (C-4′), 29.5–30.2 (C-7-18, C-5′-13′), 32.1 (C-19, C-18′), 32.9 (C-14′), 33.3 (C-17′), 34.2 (C-5), 35.7 (C-3′), 53.0 (C-2), 62.1 (C-1), 72.5 (C-2′), 73.1 (C-4), 76.8 (C-3), 130.7 (C-15′), 130.8 (C-16′), 175.2 (C-1′).

Cytotoxicity assay

Cytotoxicity activity of isolated compounds 1 and 2 was evaluated *in vitro* against MCF-7 cell lines using the MTT colorimetric standard method according to Scudiere *et al.*[8]

RESULTS

Chromatographic separations of the crude extract of the stem barks of *D. boehmiii* obtained by extraction with CH_2Cl_2/MeOH (1:1), led to a new ceramide: dalbergiamide (**1**) along with one known triterpene and a mixture of phytosterol glucosides. The known triterpene was identified as olean-12-ene-3,11-dione (**2**)[9] and the mixture of steroid glucosides as glucoside 3-*O*-*β*-D-sitosterol (**3**) and glucoside 3-*O*-*β*-D-stigmasterol (**4**)[10] (Figure 1) comparing their spectroscopic data with those found in literature.

In vitro cytotoxicity activity of dalbergiamide (**1**) and olean-12-ene-3,11-dione (**2**) was evaluated against MCF-7 cell lines using MTT colorimetric method, and were found to be active with IC_{50} value 17.13 µM and 35.52 ± 2.95 µM respectively when tested at the concentration of 50 µM.

DISCUSSION

Compound **1** was isolated for the first time from natural sources, and is structure has been elucidated as follow: obtained as a white solid (m.p. 129-131°C), its molecular formula $C_{41}H_{81}O_5N$ was determined from rigorous analysis of its NMR spectra (1D & 2D) and its EI-MS spectrum which exhibited molecular ion peak $[M]^+$ at *m/z* 667.2 and characteristic fragments ions at *m/z* 647.2 $[M\text{-}H_2O\text{-}H_2]^+$, 619.4 $[M\text{-}H_2O\text{-}H_2\text{-}CO]^+$. The 1D NMR spectra of this compound, shows characteristic signals, of a ceramide backbone, with generally an amide function and two long aliphatic chains, more or less unsaturated.[11-15] In the ^{1}H NMR spectrum of compound **1**, a signal of a proton exchangeable with D_2O is observed at δ_H 8.57 (d, *J* = 9.0 Hz) advising the presence of the group -NH-CO-.

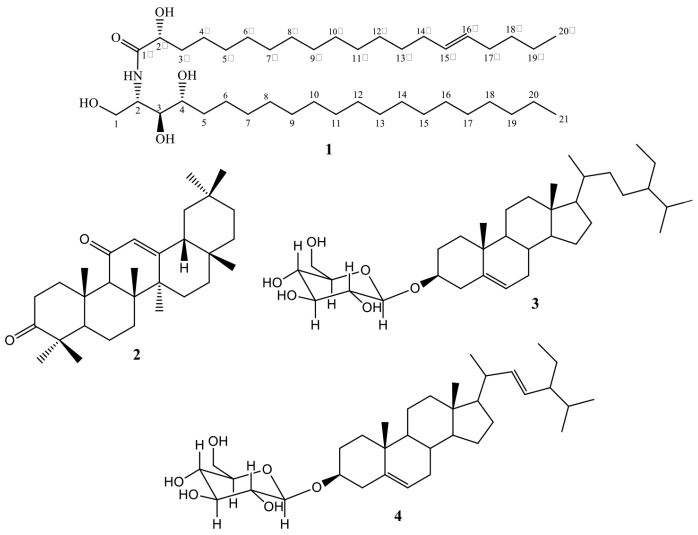
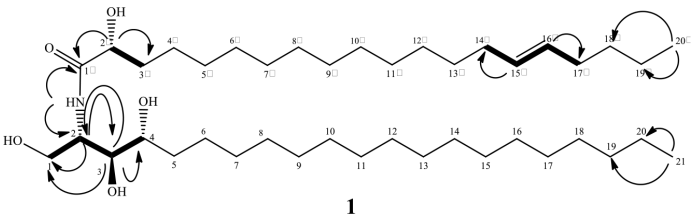


Figure 1: Structures of isolated compounds (1-4).

Moreover, ^{13}C-NMR spectrum showed at δ_C 53.0 a signal of C–N and a C=O signal at δ_C 175.2 confirming the presence of a secondary amide function in this compound.[15,16] ^{1}H NMR spectrum also exhibited resonances for terminal methyls of two aliphatic chains at δ_H 0.87 (6H, t, *J* = 6.9 Hz), an azomethine proton at δ_H 5.12 (1H, m), signals at δ_H 4.51 (m) and 4.42 (m) for an hydroxymethylene group, three carbinylic protons at δ_H 4.29 (H-4), 4.36 (m, H-3) and 4.61 (m, H-2′), as well as signals of four -OH groups at δ_H 6.21 (1H, brs), 6.68 (2H, brs) and 7.68 (brs). Two alkyl long chains were also observed as a broad signal at δ_H 1.20-1.34. Further extensive analysis of the ^{1}H NMR spectrum, reveals signals of two olefinic protons at δ_H 5.54 (m) and 5.49 (m), suggesting the presence of a disubstituted double bond. As expected, instead the characteristic signals of secondary amide group, the ^{13}C NMR spectrum of compound **1** exhibited two carbon signals at δ_C 130.8 and 130.7 corresponding to a double bond, with a *trans* configuration, that was determined by the chemical shifts of its allylic carbon atoms appearing at δ_C 32.9 and 33.3.[17,18] This double bond was located in the fatty acid moiety at C–15′ by EI-MS analysis. Signals of an oxymethylene at δ_C 62.1 and three oxymethines at δ_C 76.8, 73.1 and 72.5 were also visible. Additionally, several signals of carbon atoms in the range of δ_C 34.2-22.9 related to $-CH_2-$ groups and a signal at δ_C 14.3 corresponding to two terminals $-CH_3$ were also deduced from ^{13}C NMR spectrum, confirming that compound **1** belongs to the class of ceramide.

In the ^{1}H–^{1}H COSY spectrum several correlations are observed. It is the case of the correlation of the two $-CH_2-$ protons at δ_H 4.42 and 4.51 with the methine proton at δ_H 5.12, which also showed correlation with the methine at δ_H 4.36. This last methine proton at δ_H 4.36 also correlated with the methine proton at δ_H 4.29, suggesting three hydroxyl groups respectively on C–1, C–3 and C–4. This spectrum also exhibited correlations between the two olefinic protons at δ_H 5.54 and 5.49, as well as, respective correlations between these protons and their adjacent methylenes at δ_H 1.98 and 2.16. The correlation of H-2′ at δ_H 4.61 and the methylene protons H-3' at δ_H 2.03 and 2.22 was also visible. Interpretation of the HMBC spectrum revealed correlations of the proton of amide group at δ_H 8.57 and -C=O group at δ_C 175.2 and the -CH-NH at δ_C 53.0; correlations of H-2 (δ_H 5.12) and C-1 (δ_C 62.1) and C-3 (δ_C 76.8); correlations of H-3 (δ_H 4.36) and C-1 (δ_C 62.1), C-2 (δ_C 53.0), and C-4 (δ_C 73.1), confirming positions of -OH groups on C-1, C-3 and C-4 (Figure 2).[15] Correlations between H-2′ (δ_H 4.61) -C=O (δ_C 175.2) and



1

Figure 2: ^{1}H-^{1}H COSY (▬) and key HMBC correlations (H◠C) of dalbergiamide (1).

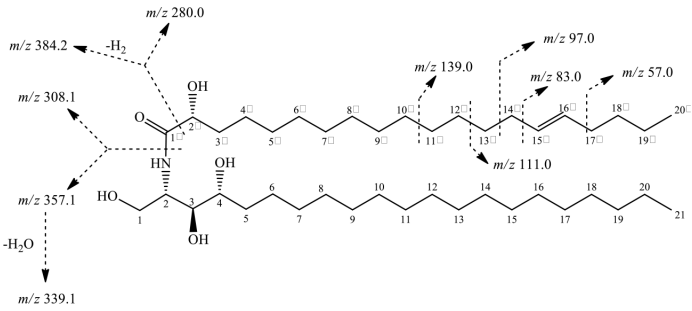


Figure 3: EI-MS fragmentation pattern of dalbergiamide (1).

C-3′ (δ_C 35.7) were also visible confirming the α-hydroxy fatty acid side chain.

The length of the long chain base and the fatty acid was determined by EI-MS, which showed significant fragment ion peaks at *m/z* 384, 357 and 339 that were congruent to the long chain base moiety (Figure 3). The length of the fatty acid chain was deduced from the fragment at *m/z* 280 resulting from the cleavage in α of the carbonyl group of the amide function. This fragment, combined with the ones observed at *m/z* 57 and 83, resulting from the α-cleavages of the double bond, confirm the emplacement of this olefine bond on the fatty acid chain. All these assignments were congruent with the proposed structure.

Finally, considering the steric hindrance and biogenesis of sphingolipids, absolute stereochemistry of the phytosphingosine moiety can be generally determine using chemical shift of the carbon C–2 to C–4.[17] Thus, according to the ^{13}C NMR data of compound **1**, the relative stereochemistries of C–2 (δ_C 53.0), C–3 (δ_C 76.8), and C–4 (δ_C 73.1), were found to be 2*S*, 3*S*, and 4*R*.[17,18] From the above analysis the structure of compound **1** was set as (2′*R*, 15′*E*)-2′-hydroxy-N-[(2*S*,3*S*,4*R*)-1,3,4-trihydroxyhenicosan-2-yl]eicos-15′-enamide named dalbergiamide.

The new compound dalbergiamide (**1**) and the triterpene olean-12-ene-3,11-dione (**2**) were tested for their cytotoxic activities against MCF-7 cells. These two compounds were slightly active at 50 µM, the most remarkable cytotoxic activity against breast cancer cells MCF-7 being recorded for compound **1** with IC_{50} value of 17.13 ±0.21 µM while compound **2** was less active with IC_{50} value 35.52 ± 2.95 µM. Previous studies have proved the activity of ceramides against cancer cell lines[19] and established their mechanism of action. Ceramides have been shown to act by blocking the cell cycle, following the up-regulation of $p27^{kip1}$ thus causing apoptosis.[20] This could explain why the new ceramide, dalbergiamide (**1**) showed promising cytotoxic activity against MCF-7 cancer cell lines. The results also corroborate with those of some authors who showed that one of the most important biological effects of natural terpenoids is the ability to prevent and to treat several cancers including breast cancer.[21-25] Others studies have shown that triterpenes with an oleanane type skeleton displayed cytotoxic activity against cancer cell lines.[16]

CONCLUSION

The crude CH_2Cl_2/MeOH (1:1) extract of *D. boehmii* stem barks afforded a new ceramide named dalbergiamide (**1**); a triterpene: olean-12-ene-3,11-dione (**2**) and a mixture of two sterols: glucoside 3-*O*-β-D-sitosterol (**3**) and glucoside 3-*O*-β-D-stigmasterol (**4**). The new ceramide dalbergiamide (**1**) and the triterpene olean-12-ene-3,11-dione (**2**) showed cytotoxic activity against MCF-7 cancer cell lines, the most remarkable activity being recorded for compound 1. This result, associated with previous, suggests that a particular intention should be placed on this plant in order to evaluate its action in the treatment of cancers.

ACKNOWLEDGEMENT

The authors are grateful to the TWAS (The World Academy of Science), the H. E. J. Research Institute of Chemistry, and the International Center for Chemical and Biological Sciences (ICCBS) of the University of Karachi, Karachi-75270, Pakistan; for the award of TWAS-ICCBS sandwich Postgraduate fellowship FR number: 3240275059 to J.P.A.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

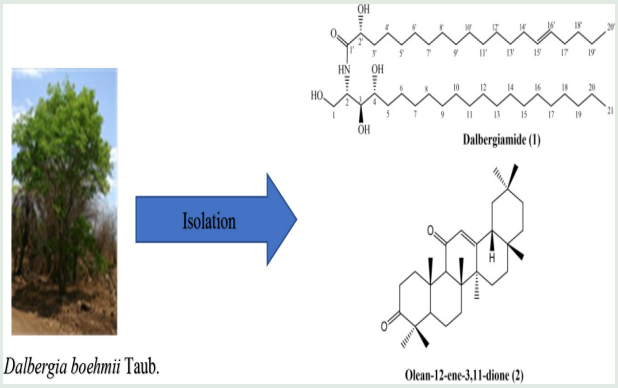
NMR: Nuclear Magnetic Resonance; **HMBC:** Heteronuclear Multiple Bonds Correlation; **COSY:** COrrelated SpectroscopY; **HSQC:** Heteronuclear Single Quantum Correlation; **EI-MS:** Electronic Impact Mass Spectrometry; **CH_2Cl_2:** Methylene Chloride; **MeOH:** Methanol; **TLC:** Thin Layer Chromatography; **EtOAc:** Ethyl acetate; **brs:** broad singlet; **m:** multiplet; **dd:** doublet doublet; **DMSO:** Dimethyl sulfoxide; **MTT:** 3-[4,5-dimethylthiazole-2-yl]-2, 5-diphenyl-tetrazolium bromide, **OD:** Optical Density.

REFERENCES

1. Barragán-Huerta BE, Peralta-Cruz J, González-Laredo RF, Karchesy J. Neocandenatone, an isoflavan-cinnamylphenol quinone methide pigment from *Dalbergia congestiflora*. Phytochemistry. 2004;65(7):925-8. doi: 10.1016/j.phytochem.2003.11.011, PMID 15081296.
2. Gwedela MNV, Terai H, Lampiao F, Matsunami K, Aizawa H. Anti-seizure effects of medicinal plants in Malawi on pentylenetetrazole-induced seizures in zebrafish larvae. J Ethnopharmacol. 2022;284:114763. doi: 10.1016/j.jep.2021.114763, PMID 34688800.
3. Mutai P, Heydenreich M, Thoithi G, Mugumbate G, Chibale K, Yenesew A. 3-Hydroxyisoflavanones from the stem bark of Dalbergia melanoxylon: Isolation, antimycobacterial evaluation and molecular docking studies. Phytochem Lett. 2013;6(4):671-5. doi: 10.1016/j.phytol.2013.08.018.
4. Vasudeva N, Vats M, Sharma SK, Sardana S. Chemistry and biological activities of the genus Dalbergia – a review. Pharmacol Rev. 2009;3(6):307-19.
5. Saha S, Shilpi JA, Mondal H, Hossain F, Anisuzzman MD, Hassan MDM *et al.* Ethnomedicinal, phytochemical, and pharmacological profile of the genus *Dalbergia* L. (Fabaceae). Phytopharmacol. 2013;4(2):291-346.
6. Abdou JP, Momeni J, Adhikari A, Tsabang N, Tchinda AT, Choudhary MI *et al.* New coumestan and coumaronochromone derivatives from *Dalbergia boehmii* Taub. (Fabaceae). Phytochem Lett. 2017;21:109-13. doi: 10.1016/j.phytol.2017.06.014.
7. Burkill HM 1995. The useful plants of west tropical Africa. Vol. 3. Families J-L. Royal Botanic Gardens, Kew.
8. Scudiero DA, Shoemaker RH, Paull KD, Monks A, Tierney S, Nofziger TH, *et al.* Evaluation of a soluble tetrazolium/formazan assay for cell growth and drug sensitivity in culture using human and other tumor cell lines. Cancer Res. 1988;48(17):4827-33. PMID 3409223.
9. Hu HJ, Wang KW, Wu B, Sun CR, Pan YJ. Chemical shift assignments of two oleanane triterpenes from *Euonymus hederaceus*. J Zhejiang Univ Sci B. 2005;6(8):719-21. doi: 10.1631/jzus.2005.B0719, PMID 16052702.
10. Mahbuba K, Mirajum B, Quader MdA. Sterols and sterol glucoside from *Phyllanthus Pecies*. Dhaka Univ J Sci. 2012;60(1):5-10.
11. Yaoita Y, Kohata R, Kakuda R, Machida K, Kikuchi M. Ceramide constituents from five Mushrooms. Chem Pharm Bull (Tokyo). 2002;50(5):681-4. doi:

10.1248/cpb.50.681, PMID 12036031.
12. Qu Y, Zhang HB, Liu JK. Isolation and structure of a new ceramide from the Basidiomycete *Hygrophorus eburnesus*. Zeitschrift für Naturforschung B. 2004;59(2):241-4. doi: 10.1515/znb-2004-0218.
13. Li X, Sun DD, Chen JW, He LW, Zhang HQ, Xu HQ. New sphingolipids from the root of *Isatis indigotica* and their cytotoxic activity. Fitoterapia. 2007;78(7-8):490-5. doi: 10.1016/j.fitote.2007.03.017, PMID 17590532.
14. Talla E, Yaya GAJ, Mokale KAL, Abdou JP, Tchinda A, Frederich M *et al.* Chemical constituents from *Erythrina droogmansiana* (Fabaceae), radical scavenging and antibacterial potential of some extracts and compounds. NPAIJ. 2016;12(1):012-20.
15. Assaf HK, Nafady AM, Allam AE, Hamed ANE, Kamel MS, Shimizu K. Forsskamide, a new ceramide from aerial parts of *Forsskaolea tenacissima* Linn. Nat Prod Res. 2018;32(20):2452-6. doi: 10.1080/14786419.2017.1419234. PMID 29281899.
16. Mbosso EJT, Nguedia JCA, Meyer F, Lenta BN, Ngouela S, Lallemand B *et al.* Ceramide, cerebroside and triterpenoid saponin from the bark of aerial roots of *Ficus elastica* (Moraceae). Phytochemistry. 2012;83:95-103. doi: 10.1016/j.phytochem.2012.07.010, PMID 22963707.
17. Tao WW, Yang NY, Liu L, Duan JA, Wu DK, Qian DW *et al.* Two new cerebrosides from the pollen of *Typha angustifolia*. Fitoterapia. 2010;81(3):196-9. doi: 10.1016/j.fitote.2009.08.026, PMID 19720118.
18. Nyemb JN, Tchinda AT, Talla E, Nanga EB, Ngoudjou DT, Henoumont C *et al.* Vitellaroside, A New Cerebroside from *Vitellaria paradoxa* (Sapotaceae) and its Bioactivities. Nat Prod Chem Res;06(1). doi: 10.4172/2475-7675.1000306.
19. Samra RM, Soliman AF, Zaki AA, Ashour A, Al-Karmalawy AA, Hassan MA *et al.* Bioassay-guided isolation of a new cytotoxic ceramide from Cyperus rotundus L. S Afr J Bot. 2021;139:210-6. doi: 10.1016/j.sajb.2021.02.007.
20. Kim SW, Kim HJ, Chun YJ, Kim MY. Ceramide produces apoptosis through induction of p27(kip1) by protein phosphatase 2A-dependent Akt dephosphorylation in PC-3 prostate cancer cells. J Toxicol Environ Health A. 2010;73(21-22):1465-76. doi: 10.1080/15287394.2010.511553, PMID 20954073.
21. Rabi T, Gupta S. Dietary terpenoids and prostate cancer chemoprevention. Front Biosci. 2008;13:3457-69. doi: 10.2741/2940, PMID 18508447.
22. Rabi T, Bishayee A. Terpenoids and breast cancer chemoprevention. Breast Cancer Res Treat. 2009;115(2):223-39. doi: 10.1007/s10549-008-0118-y, PMID 18636327.
23. Yang H, Dou QP. Targeting apoptosis pathway with natural terpenoids: implications for treatment of breast and prostate cancer. Curr Drug Targets. 2010;11(6):733-44. doi: 10.2174/138945010791170842, PMID 20298150.
24. Kuttan G, Pratheeshkumar P, Manu KA, Kuttan R. Inhibition of tumor progression by naturally occurring terpenoids. Pharm Biol. 2011;49(10):995-1007. doi: 10.3109/13880209.2011.559476, PMID 21936626.
25. Parikh NR, Mandal A, Bhatia D, Siveen KS, Sethi G, Bishayee A. Oleanane triterpenoids in the prevention and therapy of breast cancer: Current evidence and future perspectives. Phytochem Rev. 2014;13(4):793-810. doi: 10.1007/s11101-014-9337-5, PMID 25395898.

GRAPHICAL ABSTRACT



SUMMARY

- Chemical constituents of *Dalbergia boehmii* Taub. were investigated
- *In vitro* cytotoxicity activity of some isolated compounds was investigated against MCF-7 cell lines.
- Compounds 1 and 2 were found to be cytotoxic at 50 µM with IC_{50} value 17.13 µM and 35.52 ± 2.95 µM respectively
- *Dalbergia boehmii* Taub. is a potential source of cytotoxic agents.

Cite this article: Abdou JP, Nyemb JN, Momeni J, Fadimatou A, Gbaweng AJY, Tsopmejio JP, Fawa G, Choudhary MI. A New Cytotoxic Ceramide from *Dalbergia boehmii* Taub. Stem Bark. Pharmacog Res. 2022;14(4):442-5.