

Medicinal Plant Images

Aloe ferox and *Callistemon rigidus*

I.E. Cock



Figure 1: *Aloe ferox*: Aloe is a genus of approximately 400 succulent plants, many of which are native to Africa. Several Aloe species have well known medicinal properties which include accelerated wound healing, as well as antimicrobial, anti-inflammatory, immunomodulatory and antioxidant bioactivities (as previously reviewed).^[1,2] The species pictured (*Aloe ferox*, also known as Cape Aloe) is native to South Africa. *Aloe ferox* is reputed to be one of the most promising species of Aloe, with wide ranging therapeutic properties. This photograph was taken in Kirstenbosch Botanic Gardens, Cape Town, South Africa by Dr Ian Cock in December 2010.

1. Mpala L, Chikowe G, Cock IE, No evidence of antiseptic properties and low toxicity of selected Aloe species. J Pharm Negative Results 2010; 1, 1:10-16.
2. Cock IE, Antimicrobial activity of *Aloe barbadensis* Miller leaf gel components. Internet J Microbiol 2008; 4, 2.



Figure 2: *Callistemon rigidus*: The genus *Callistemon* (family Myrtaceae) is a small genus of 34 trees and shrubs, all of which are endemic to Australia. *Callistemon* leaves had multiple medicinal uses by indigenous Australians, including being used to cure respiratory tract infections, coughing and bronchitis, as well as uses as a general antiseptic.^[3] This photograph was taken in Brisbane, Australia by Dr Ian Cock in July 2011.

3. Cock IE, Medicinal and aromatic plants – Australia. In Ethnopharmacology, Encyclopedia of Life Support Systems (EOLSS), Developed under the auspices of UNESCO, EOLSS Publishers, Oxford, UK [http://www.eolss.net].

Department Profile

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Welcome at the Medical University of Białystok in Poland. The main seat of the Medical University of Białystok was (and is still) located in the 18th century Branicki Palace (Figure 1), the most magnificent and precious historic structure located in Białystok.

In 1977, the Faculty of Pharmacy with the Division of Medical Analytics was established, however, there was no initial recruitment until 1987, when the first group of students began their studies at the Faculty of Pharmacy with the Division of Medical Analytics. The first theoretical science departments were housed adjacent to the palace in *Collegium Primum* (Figure 2), and in the second year of existence the University obtained the right to confer scientific degrees.

Approximately 4,000 students from all over Poland and the rest of the world, studying in both Polish and English, are enrolled at our University. Currently, the Medical University of Białystok offers fourteen various degree programs, taught by over 730 members of our highly qualified faculty from the Medical Faculty with the Dentistry Division, Faculty of Pharmacy with the Division of Laboratory Medicine, and Faculty of Health Sciences. Our teaching departments and clinics provide an excellent academic and supportive environment necessary to equip students with a high level of theoretical knowledge and practical training, essential for future physicians, pharmacists and diagnostics. The recent and future addition of modern campus facilities (Figure 3), implementation of new teaching models, and abundant research opportunities also

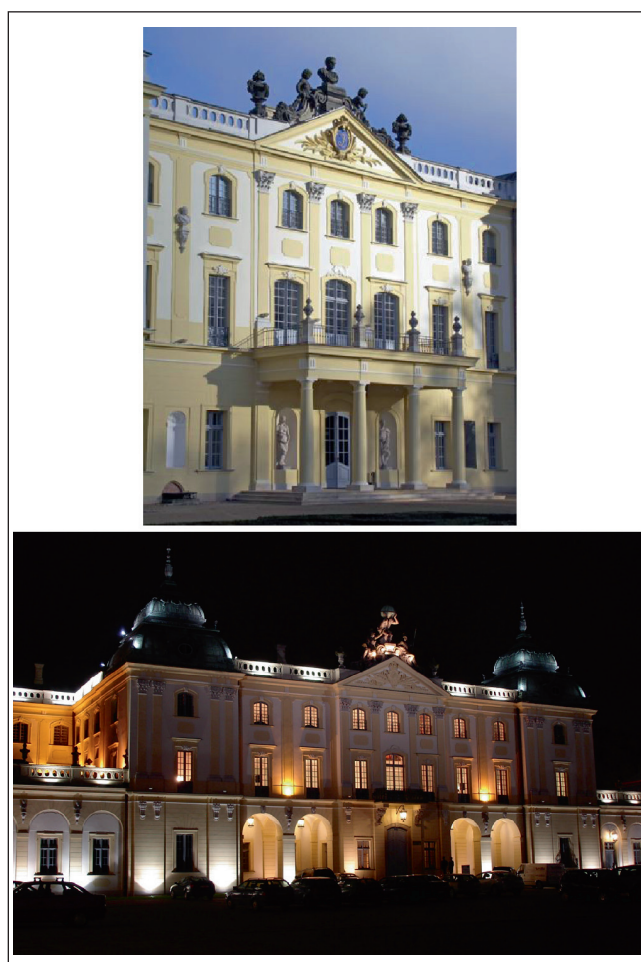


Figure 1: The Branicki Palace, the main seat of the Medical University of Białystok

significantly contribute to the unique educational experience at the University. The newly established and constructed the Euroregional Centre of Pharmacy in Białystok will establish scientific co-operation with other pharmaceutical and medical entities all around Poland and also with those situated in foreign border regions. Moreover, the Centre wants to co-operate with the police, the Public Prosecutor's Office, the Fire Service and the Border Guard

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Figure 2: Collegium Primum, Faculty of Pharmacy Medical University of Białystok



Figure 3: Euroregional Centre of Pharmacy, Medical University of Białystok (under construction)

Department of Pharmacognosy at the Medical University of Białystok is productive as far as training of graduate students (Pharm. M) and researches are concerned. Our studies focus on the isolation and structure elucidation of polyphenols, essential oils, triterpenes and phytosterols (identification by using spectral methods UV, IR, 1D and 2D - NMR and MS) from different plant matrices. Further, pure isolated compounds or extracts/fractions are tested for their biological activities, on the other hand they are essential for the development of modern analytical methods (HPTLC, HPLC-DAD-MS, GC-MS) in order to assess the quality of raw materials or herbal formulations. Main interests are in the field of different plant extracts and phytoconstituents with antioxidant, anticancer as well as antimicrobial/antifungal activities. Researches include plants used in European traditional medicine, particularly those endemic to (North-Eastern) Poland: *Cirsium* sp., *Erigeron acris* L., *Erigeron annuus* L., *Bidens tripartita* L., *Rubus* sp.,

Cirsium rivulare (Jacq.) All., *Potentilla argentea* L., *Lychnis flos-cuculi* L., *Potentilla* sp..

Selected publications of researchers from the Department of Pharmacognosy, Faculty of Pharmacy, Medical University of Białystok:

1. Olejniczak S, Ganicz K, Tomczykowa M, Gudej J, Potrzebowski J. Structural studies of 2-(3',4'-dihydroxyphenyl)-7-β-D-glucopyranos-1-O-yl-8-hydroxy-chroman-4-one in the liquid and solid states by means of 2D NMR spectroscopy and DFT calculations. *J. Chem. Soc., Perkin Transact.* 2002; 6:1059-65.
2. Tomczyk M, Gudej J, Sochacki M. Flavonoids from *Ficaria verna* Huds. *Z. Naturforsch.* 2002; 57c:440-4.
3. Gudej J, Tomczyk M. Determination of flavonoids, tannins and ellagic acid in leaves from *Rubus* L. species. *Arch. Pharm. Res.* 2004; 27:1114-9.
4. Nazaruk J, Jakoniuk P. Flavonoid composition and antimicrobial activity of *Cirsium rivulare* (Jacq.) All. flowers. *J. Ethnopharmacol.* 2005; 102:208-12.
5. Tomczykowa M, Gudej J, Majda T, Góra J. Essential oil of *Bidens tripartita* L. *J. Essent. Oil Res.* 2005; 17:632-5.
6. Nazaruk J, Gudej J, Majda T, Góra J. Investigation of the essential oil of *Erigeron acris* L. herb. *J. Essent. Oil Res.* 2006; 18:88-90.
7. Tomczyk M. Secondary metabolites from *Potentilla argentea*. *Biochem. Syst. Ecol.* 2006; 34:770-3.
8. Wolniak M, Tomczyk M, Gudej J, Wawer I. Structural studies of methyl brevifolincarboxylate in solid state by means of NMR spectroscopy and DFT calculations. *J. Mol. Struct.* 2006; 825:26-31.
9. Galicka A, Nazaruk J. Stimulation of collagen biosynthesis by flavonoid glycosides in skin fibroblasts of osteogenesis imperfecta type I and the potential mechanism of their action. *Int. J. Mol. Med.* 2007; 20:889-95.
10. Nazaruk J. Antioxidant activity and total phenolic content in *Cirsium* five species from north-east region of Poland. *Fitoterapia* 2008; 79:194-6.
11. Nalewajko-Sieliwoniuk E, Nazaruk J, Antypiuk E, Kojło A. Determination of phenolic compounds and their antioxidant activity in *Erigeron acris* L. extracts and pharmaceutical formulation by flow injection analysis with inhibited chemiluminescent detection. *J. Pharm. Biomed. Anal.* 2008; 48:579-86.
12. Nazaruk J, Czechowska SK, Markiewicz R, Borawska MH. Polyphenolic compounds and *in vitro* antimicrobial and antioxidant activity of aqueous extracts from leaves of some *Cirsium* species. *Nat. Prod. Res.* 2008; 22:1583-88.
13. Tomczyk M, Latté KP. *Potentilla* - A review of its phytochemical and pharmacological profile. *J. Ethnopharmacol.* 2009; 122:184-204.

14. Tomczyk M, Bazyłko A, Staszewska A. Determination of polyphenolics in extracts of *Potentilla* species by high-performance thin-layer chromatography photodensitometry method. *Phytochem. Anal.* 2010; 21:174-9.
15. Walesiuk A, Nazaruk J, Braszko J. Pro-cognitive effects of *Cirsium rivulare* extracts in rats, *J. Ethnopharmacol.* 2010; 129:261-6.
16. Tomczyk M, Tumanov A, Zaniewska A, Surazyński A. The potential mechanism of tiliroside-dependent inhibition of t-butylhydroperoxide-induced oxidative stress in endometrial carcinoma cells. *Planta Med.* 2010; 10:963-8.
17. Nazaruk J, Karna E, Wieczorek P, Sacha P, Tryniszewska E. *In vitro* antiproliferative and antifungal activity of essential oils from *Erigeron acris* L. and *Erigeron annuus* (L.) Pers. *Z. Naturforsch.* 2010; 65c:642-6.
18. Tomczyk M, Wiater A, Pleszczyńska M. *In vitro* anticariogenic effects of aerial parts of *Potentilla recta* and its phytochemical profile. *Phytother. Res.* 2011; 25:343-50.
19. Tomczyk M, Leszczyńska K, Tomczyk M, Tryniszewska E, Kalemba D. Composition of the essential oil of *Bidens tripartita* L. roots and its antibacterial and antifungal activities. *J. Med. Food* 2011; 14:428-33.

Altogether, the Medical University of Bialystok offers ideal conditions for studying and living. Please browse the website (www.umwb.edu.pl) to discover more details about our programs and faculties and we cordially invite you to enroll at our University and feel free to contact me for more information about the Department of Pharmacognosy.