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Unusual flavones in *Cytisus* Desf.

OR Pereira ¹, MR Domingues ², AM Silva ², SM Cardoso ³

¹CERNAS – Escola Superior Agrária, Instituto Politécnico de Coimbra, Bencanta, 3040–316 Coimbra, Portugal; Departamento de Tecnologias de Diagnóstico e Terapêutica, Escola Superior de Saúde, Instituto Politécnico de Bragança, Av. D. Afonso V, 5300–121 Bragança, Portugal

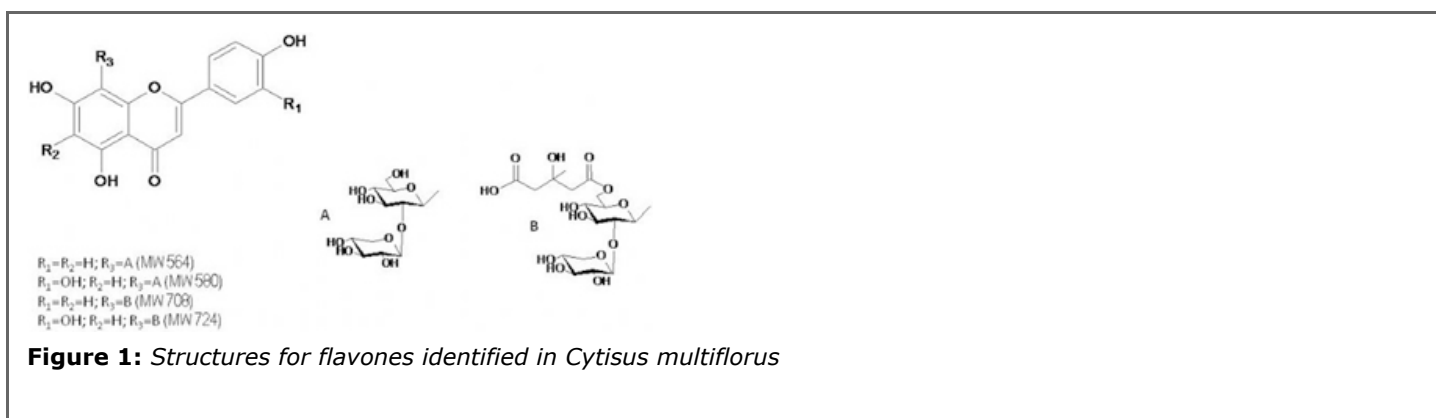
²Departamento de Química & QOPNA, Universidade de Aveiro, 3810–193 Aveiro, Portugal

³CERNAS – Escola Superior Agrária, Instituto Politécnico de Coimbra, Bencanta, 3040–316 Coimbra, Portugal; CIMO – Escola Superior Agrária, Instituto Politécnico de Bragança, Campus de Santa Apolónia –5301–854, Bragança, Portugal

Congress Abstract

Cytisus Desf. (Fabaceae) is a diversified genus enclosing approximately sixty species, which are particularly found around the Mediterranean Sea. Many plants of this genus exhibit bioactive properties such as diuretic, hypnotic, anxiolytic, antiparasitic, antidiabetic and antioxidant [1] and, in particular the latter, has been closely associated to the high content in flavonoids [2].

The present work aims to contribute to the knowledge of *Cytisus* chemical composition, through the identification of new flavonoids in that genus. The compounds in focus were detected in ethanolic extracts of *Cytisus multiflorus* (Aiton) Sweet flowers by means of HPLC-DAD, ESI-MS and MSⁿ analyses. These included the two isomers 2''-O-pentosyl-6-C-hexosyl-luteolin and 2''-O-pentosyl-8-C-hexosyl-luteolin (MW 580 Da), the two isomers 2''-O-pentosyl-6-C-hexosyl-apigenin and 2''-O-pentosyl-8-C-hexosyl-apigenin (MW 564 Da), the 6''-O-(3-hydroxy-3-methylglutaryl)-2''-O-pentosyl-C-hexosyl-luteolin (MW 724 Da) and the 6''-O-(3-hydroxy-3-methylglutaryl)-2''-O-pentosyl-C-hexosyl-apigenin (MW 708 Da). Attending that half of these compounds were herein described for first time in Fabaceae, overall, the present work is a valuable contribution for the phenolic elucidation of *Cytisus* genus as well as of Fabaceae family.



Acknowledgement: Pereira OR thanks for the PROTEC grant SFRH/PROTEC/49600/2009

References: 1. Gião MS et al. (2007) J Sci Food Agr 87: 2638–2647

2. Luis A et al. (2009) J Med Plants Res 3: 886–893

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Terpenoids from the Root of *Salvia hypoleuca* BenthCahari A¹, Chamerini M², Soeichiro S¹¹Medicinal Plants Research Center, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran;²Department of Chemistry, Faculty of Science, Colestan University, Gorgan, Iran

The genus *Salvia* comprises nearly 500 species and is one of the largest members of the Lamiaceae family. Fifty eight species of this genus are found in Iran, 17 species of them are endemic. In this study, the roots of *Salvia hypoleuca* Benth., were collected at flowering stage from Tehran province (Iran) and dried at room temperature, in shade. Dried plant materials were cut into small pieces and extracted with ethyl acetate by percolation method. Three sterols, sitosterol oleate, sitosterol and stigmasterol, two diterpenoids, manool and 7 α -acetoxy royleanone and five triterpenoids, ursolic acid, oleanolic acid, 3-epicoresolic acid, 3-epimaslinic acid and oleanolic acid, were isolated and purified by column chromatography (silicagels normal and reverse phases, Sephadex LH20). The structures of these compounds were identified by spectroscopic methods including ¹H-NMR, ¹³C-NMR, DEPT, HSQC, HMBC and H-H COSY. These compounds have been reported for the first time from *Salvia hypoleuca* of which oleanolic acid has not been previously reported from the genus *Salvia*. **Keywords:** *Logochilus cabulicus*, flavonoid, chromatography, spectroscopy. **Acknowledgement:** This research was supported by the Medicinal Plants Research Center, Faculty of Pharmacy, Tehran University of Medical Sciences.

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Phytochemical study of *Logochilus cabulicus* BenthCahari A¹, Buzari L², Soeichiro S¹, Shakeri A², Motaghedi L²¹Medicinal Plants Research Center, Faculty of Pharmacy, Tehran University of Medical Sciences, PO Box 141556451,Tehran, Iran; ²Department of Chemistry, Faculty of science, Golestan University, Gorgan, Iran; ³Department of Mechanical Engineering, Tabriz University, Tabriz, Iran

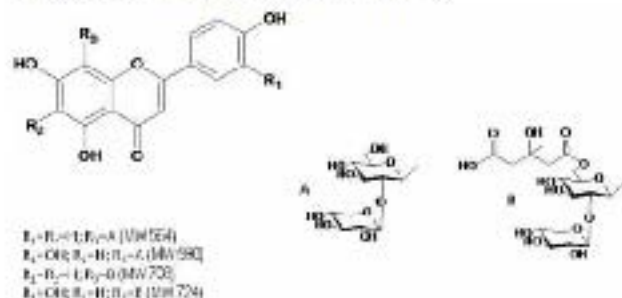
The genus *Logochilus*, belongs to Lamiaceae family and consists of 44 species all over the world, 33 of which grow in central Asia. Five species of this genus have been found in Flora Iranica and 4 species exclusively grow in Iran. Chemical studies on some *Logochilus* species have studied [3-12]. One of these species, *Logochilus cabulicus* Benth., was collected during flowering stage, dried at ambient temperature and shade condition and cut into small pieces. Plant material was successively extracted with ethyl acetate and methanol solvents using percolation method. Main compounds were separated and isolated by column and thin layer chromatography. The isolated compounds were identified by spectroscopic methods, including ¹H-NMR and ¹³C-NMR. In conclusion, four flavonoids, Tricein 3'-methyl ether (1), Quercetin (2), Quercetin 3-O- β -D-glucopyranoside (3), Quercetin 3-O- α -L-rhamnopyranosyl (1'6) β -D-glucopyranoside (4), two steroids, β -Sitosterol acetate (5), Stigmasterol acetate (6) and one triterpenoid, Lupeol (7), have been identified, which not previously reported from this plant species.

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Unusual flavones in *Cytisus* Desf.Pereira OR¹, Domingues MR², Silva AM², Cardoso SM³¹CERNAS - Escola Superior Agrária, Instituto Politécnico de Coimbra, Rua da Arganda, 3040 - 316 Coimbra, Portugal; ²Departamento de Tecnologias de Diagnóstico e Terapêutica, Escola Superior de Saúde, Instituto Politécnico de Bragança, Av. D. Afonso V, 5300 - 121 Bragança, Portugal;³Departamento de Química & QORNA, Universidade de Aveiro, 3810 - 193 Aveiro, Portugal; ⁴CERNAS - Escola Superior Agrária, Instituto Politécnico de Coimbra, Rua da Arganda, 3040 - 316 Coimbra, Portugal; ⁵CIMO - Escola Superior Agrária, Instituto Politécnico de Bragança, Campus de Santa Apolónia - 5301 - 854, Bragança, Portugal

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in ethanolic extracts of *Cytisus multiflorus* (Aiton) Sweet flowers by means of HPLC-DAD, ESI-MS and MSⁿ analyses. These included the two isomers 2''-O-pentosyl-6-C-hexosyl-luteolin and 2''-O-pentosyl-8-C-hexosyl-luteolin (MW 580 Da), the two isomers 2''-O-pentosyl-6-C-hexosyl-apigenin and 2''-O-pentosyl-8-C-hexosyl-apigenin (MW 564 Da), the 6''-O-(3-hydroxy-3-methylglutaroyl)-2''-O-pentosyl-C-hexosyl-luteolin (MW 724 Da) and the 6''-O-(3-hydroxy-3-methylglutaroyl)-2''-O-pentosyl-C-hexosyl-apigenin (MW 708 Da). Attending that half of these compounds were herein described for first time in Fabaceae, overall, the present work is a valuable contribution for the phenolic elucidation of *Cytisus* genus as well as of Fabaceae family.

Figure 1: Structures for flavones identified in *Cytisus multiflorus*

Acknowledgement: Pereira OR thanks for the PROTEC grant SFRH/PRO-TEC/49600/2009. **References:** 1. Cize MS et al. (2007) Sci Food Agr 57: 2638 - 2647 2. Luis A et al. (2009) J Med Plants Res 3: 886 - 893

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Polymeric biophenols in olive mill wastewaters Cardoso SM¹, Faísão S², Peres AM², Pereira OR¹, Domingues MR³¹CERNAS - Escola Superior Agrária, Instituto Politécnico de Coimbra, Rua da Arganda, 3040 - 316 Coimbra, Portugal; ²CIMO - Escola Superior Agrária, Instituto Politécnico de Bragança, Campus de Sta. Apolónia, 5301 - 855 Bragança, Portugal;³CIMO - Escola Superior Agrária, Instituto Politécnico de Bragança, Campus de Sta. Apolónia, 5301 - 855 Bragança, Portugal; ⁴CIMO, IARR - Escola Superior Agrária, Instituto Politécnico de Bragança, Campus de Sta. Apolónia, 5301 - 855 Bragança, Portugal; ⁵CERNAS - Escola Superior Agrária, Instituto Politécnico de Coimbra, Rua da Arganda, 3040 - 316 Coimbra, Portugal; ⁶Escola Superior de Saúde, Instituto Politécnico de Bragança, Av. D. Afonso V, 5300 - 121 Bragança, Portugal; ⁷Centro de Espectrometria de Massa, Departamento de Química, Universidade de Aveiro, 3810 - 193 Aveiro, Portugal

Olive mill wastewater (OMW), the effluents generated in the olive (*Olea europaea* L.) oil extraction industry operating in three phases mode, are phytotoxic mainly due to its high phenolic content [1]. On the other hand, attending to the potential health benefits of some of their phenolic compounds, OMW are now regarded as a potent source of biophenols for food and pharmaceutical industries. An important portion of the OMW biophenols include the scleroidols found in olive pulp and their derivatives formed along the olive oil extraction process [2]. Still, due to the complex composition of OMW, many phenolic compounds remain unknown. Their structural identification can encourage the search of new bioactive compounds in OMW and contribute to further valorize this waste. In the present work, electrospray ionization-mass spectrometry analysis in the negative mode with direct infusion of OMW aqueous acetone purified extracts allowed to identify new major polymeric compounds, detected as [M-H]⁻ ions at m/z 900, 1071, 1457, 1075 and 1013. These compounds could be classified into two groups: I- derivatives of a lignan glucoside isomer and II- oleuropein oligomeric compounds. Attending that the scavenging ability of a polyphenolic compound is increased by its degree of polymerization [3], bioactivities related to that capacity are expected at least for some of these compounds.