

## Article

# Isolation of Mirificin and Other Bioactive Isoflavone Glycosides from the Kudzu Root Lyophilisate Using Centrifugal Partition and Flash Chromatographic Techniques

Magdalena Maciejewska-Turska <sup>1\*</sup>, Łukasz Pecio <sup>1,2</sup> and Grażyna Zgórk <sup>1</sup><sup>1</sup> Department of Pharmacognosy with the Medicinal Plant Garden, Faculty of Pharmacy, Medical University of Lublin, 1 Chodzki Str., 20-093 Lublin, Poland<sup>2</sup> Department of Biochemistry and Crop Quality, Institute of Soil Science and Plant Cultivation, State Research Institute, 24-100 Pulawy, Poland

\* Correspondence: magdalena.maciejewska@umlub.pl

**Citation:** Lastname, F.; Lastname, F.;  
Lastname, F. Title. *Molecules* **2022**,  
27, 6227. [https://doi.org/10.3390/  
molecules27196227](https://doi.org/10.3390/molecules27196227)

Academic Editor: Chia Ming Chang

Received: 12 August 2022

Accepted: 20 September 2022

Published: 22 September 2022

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors.  
Licensee MDPI, Basel, Switzerland.  
This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## Supplementary Materials

**Table S1.**  $^1\text{H}$ - and  $^{13}\text{C}$ -NMR spectral data obtained for puerarin, 3'-methoxypuerarin, mirificin and daidzin

No	Puerarin *		3'-Methoxypuerarin		Mirificin		Daidzin	
	$\delta_{\text{H}}$	$\delta_{\text{C}}$	$\delta_{\text{H}}$	$\delta_{\text{C}}$	$\delta_{\text{H}}$	$\delta_{\text{C}}$	$\delta_{\text{H}}$	$\delta_{\text{C}}$
2	8.33, s	152.6	8.39, s	152.8	8.32, s	152.5	8.38, s	153.2
3		122.5		122.9		122.5		122.3
4		174.8		174.8		174.8		174.7
5	7.94, d (8.8)	126.2	7.94, d (8.8)	126.2	7.94, d (8.9)	126.2	8.05, d (8.9)	126.9
6	6.99, d (8.8)	114.9	6.99, d (8.8)	114.9	6.99, d (8.9)	115.2	7.14, dd (8.9, 2.3)	115.5
7		161.0		161.0		160.9		161.4
8		112.6		112.5		112.5	7.23, d (2.3)	103.4
9		155.9		156.0		156.0		157.0
10		116.9		117.0		116.9		118.4
1'		123.0		123.0		123.1		123.7
2'	7.40, d (8.6)	129.9	7.17, d (2.0)	113.1	7.40, d (8.6)	130.0	7.41, d (8.6)	130.0
3'	6.80, d (8.6)	114.9		147.1	6.80, d (8.6)	114.9	6.82, d (8.6)	114.9
4'		157.1		146.4		157.1		157.2
5'	6.80, d (8.6)	114.9	6.81, d (8.2)	115.1	6.80, d (8.6)	114.9	6.82, d (8.6)	114.9
6'	7.40, d (8.6)	129.9	7.04, dd (8.2, 2.0)	121.5	7.40, d (8.6)	130.0	7.41, d (8.6)	130.0
3'-OCH <sub>3</sub>			3.80, s	55.6				
	8-C- $\beta$ -Glc <sub>p</sub>		8-C- $\beta$ -Glc <sub>p</sub>		8-C- $\beta$ -Glc <sub>p</sub>		7-O- $\beta$ -Glc <sub>p</sub>	
1''	4.82, d (9.8)		73.4	4.82, d (9.9)	73.4	4.81, d (9.7)	5.10, d (7.4)	100.0
2''	4.02, t (9.2)		70.8	4.03, t (9.9)	70.8	4.00, t (9.2)	3.30, dd (8.9, 7.4)	73.1
3''	3.28, t (8.3)		78.7	3.28, t (8.6)	78.7	3.27, t (8.8)	3.32, t (8.8)	76.5
4''	3.22		70.4	3.23	70.5	3.19, t (8.9)	3.19, t (8.6)	69.6
5''	3.24		81.7	3.22	81.8	3.40	3.46	77.2
6''	3.71, dd (11.8, 1.7) 3.45, dd (12.0, 5.6)		61.4	3.72, dd (11.8, 1.8) 3.45, brd (11.8)	61.3	3.92, d (9.2) 3.40	3.72, d (9.7) 3.48, dd (11.5, 5.5)	60.6
	6''-Apif							
1'''						4.78, d (3.1)	109.0	

---

2''	3.73, (3.1)	d	75.6
3''			78.7
4''	3.84, (9.4)	d	73.1
	3.57, (9.4)	d	
5''	3.33, (11.4)	d	63.0
	3.29, (11.4)	d	

---

\* NMR spectra recorded at 30° C in DMSO-*d*<sub>6</sub> with 0.1% TFA, *J* in Hz; overlapping signals are reported without designated multiplicity