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Phytochemicals of S. africana, S. elegans and S. officinalis 'Icterina

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INTRODUCTION

Salvia africana, Salvia elegans and *Salvia officinalis 'Icterina'* belong to the *Salvia* genus and Lamiaceae family. In general, these medicinal plants have high amounts of flavonoids and phenolic acids, that are thought to be closely related to their health properties [1,2].

Fig.1 *Salvia africana*

Fig.2 *Salvia elegans*

Fig.3 *Salvia officinalis 'Icterina'*

AIM: Identify the main phenolic components of *S. africana, S. elegans* and *S. officinalis 'Icterina'* by UHPLC-DAD-ESI-MS^n

METHODS

✓Preparation of hot water extracts from the aerial parts of *S. africana, S. elegans* and *S. officinalis 'Icterina'* [3];

✓ Identification of the phenolic compounds by high performance liquid chromatography with diode array detector coupled to an electrospray ionization mass spectrometer (UHPLC-DAD-ESI-MS^n).

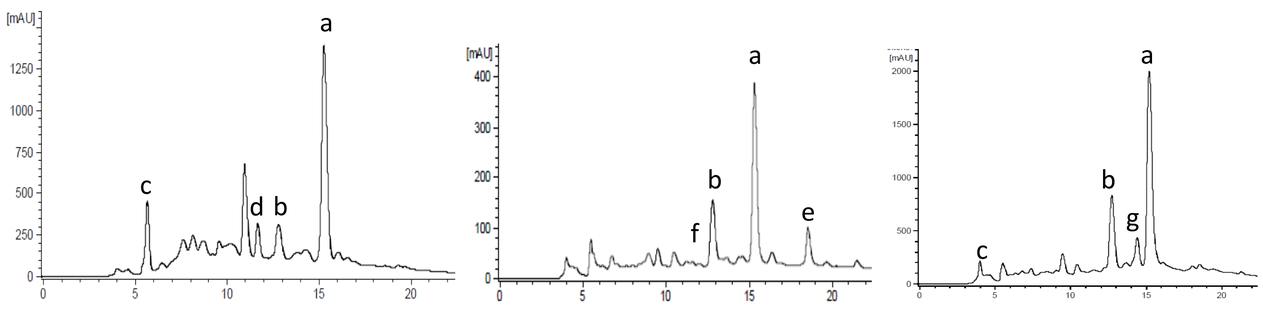
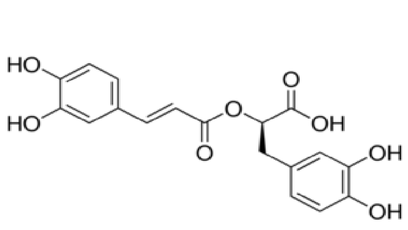
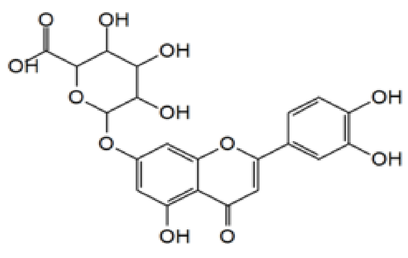


Figure 4 - Chromatographic profiles at 280 nm of HPLC-DAD-MS^n eluting fractions of *S. africana, S. elegans* and *S. officinalis 'Icterina'* aqueous extracts.



Rosmarinic acid



Luteolin-*O*-glucuronide

Figure 5 - Chemical structures of the two most abundant phenolic compounds in *S. africana, S. elegans* and *S. officinalis 'Icterina'* aqueous extracts

RESULTS

S. africana, S. elegans and *S. officinalis 'Icterina*' are rich in caffeic acid derivatives, in particular rosmarinic acid (MW 360) (Table 1, Fig. 4). In addition these three sage species have high amounts of flavone Luteolin-*O*-glucuronide (Table 1, Fig. 4).

Table 1- HPLC data of eluting fractions in aqueous extracts of *S. africana, S. elegans* and *S. officinalis 'Icterina'*

Fig.4 number	RT (min)	λ_{max} (nm)	MW	Compound
S. africana				
c	5.7	280	198	Danshensu
d	11.7	270	540	Yunnaneic acid D
b	12.9	250,267,345	462	Luteolin-*O*-glucuronide
a	15.4	290, 328	360	Rosmarinic acid
S. elegans				
b	12.9	250,267,345	462	Luteolin-*O*-glucuronide
f	12.9	290,337	718	Lithospermic acid B
a	15.4	290, 328	360	Rosmarinic acid
e	18.6	289, 328	358	3'-*O*-(8''-*Z*-caffeoyl)rosmarinic acid
S. officinalis 'Icterina'				
c	5.7	280	198	Danshensu
b	12.9	250,267,345	462	Luteolin-*O*-glucuronide
g	14.5	288, 322	556	Salvianolic acid K
a	15.4	290, 328	360	Rosmarinic acid

CONCLUSIONS

The main phenolic constituents of aqueous extracts from *S. africana, S. elegans* and *S. officinalis 'Icterina'* are here described for the first time. All these extracts are particularly rich in caffeic acid derivatives and flavones.

REFERENCES

[1] Y.R. Lu, L.Y. Foo LY. Phytochem. 2002, 59, 117-140.
[2] Y.G. Li, L. Songb, M. Liua, Z. Bi. Hub, Z. T. Wanga. J. Chromatogr. A. 2009,2016, 1941-1953.
[3] M. D. Catarino et al. Arab J Chem. DOI: 10.1016/j.arabjc. 2015.04.018

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