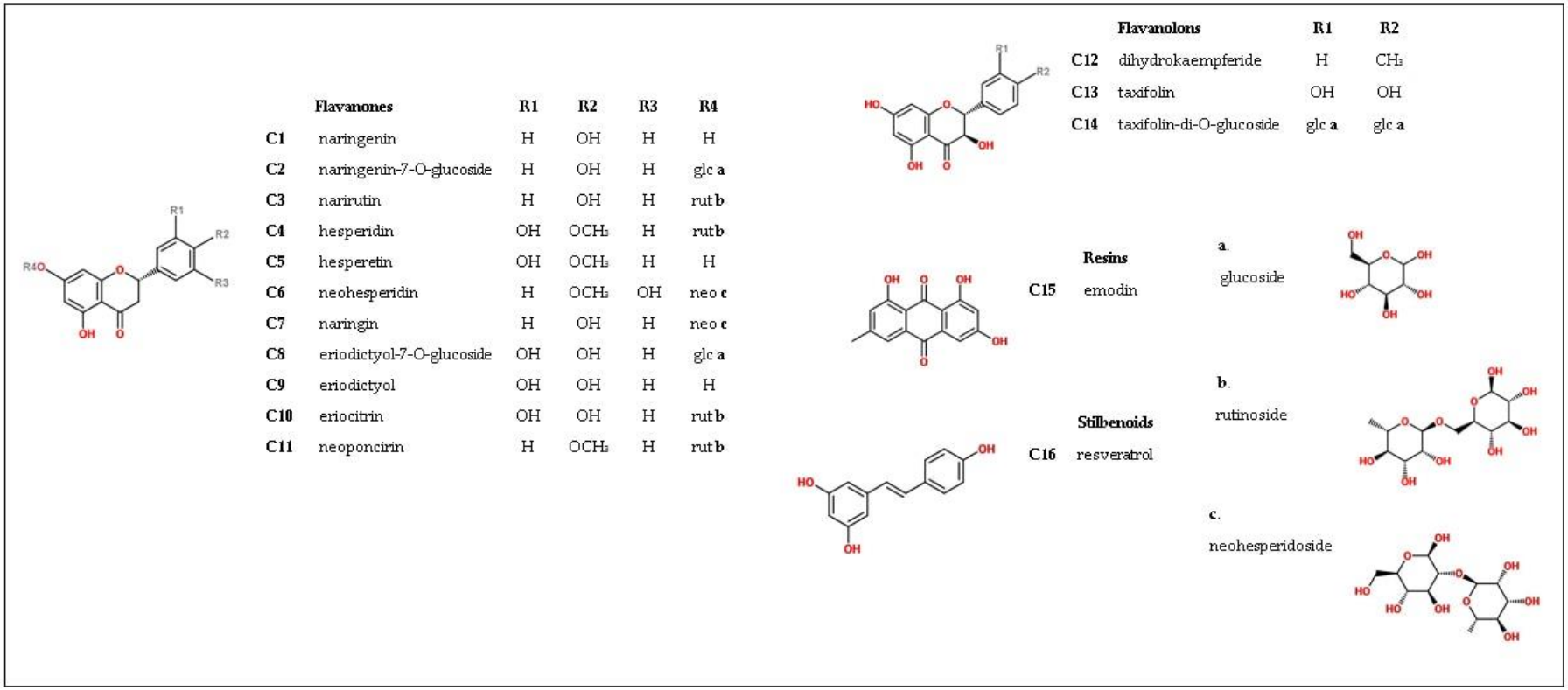
plants

Qualitative and quantitative analysis of polyphenols in *Lamiaceae* herbs – A review

Katerina Tzima[1,2], Nigel P. Brunton[2] and Dilip K. Rai[1,*]

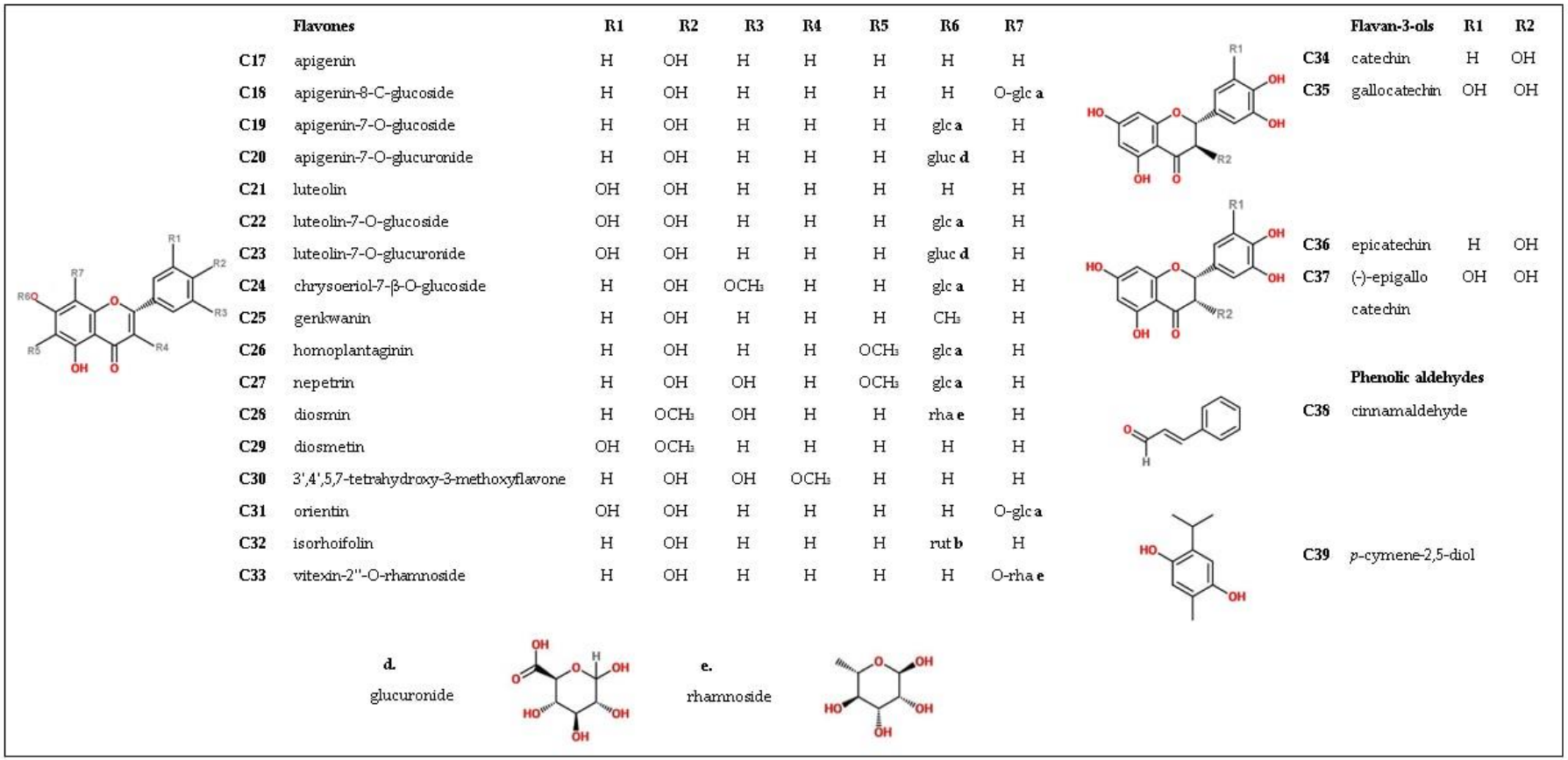
[1] Department of Food BioSciences, Teagasc Food Research Centre Ashtown, Dublin, D15 KN3K, Ireland
[2] UCD Institute of Food and Health, University College Dublin, Belfield, Dublin 4, Ireland

Supplementary Materials



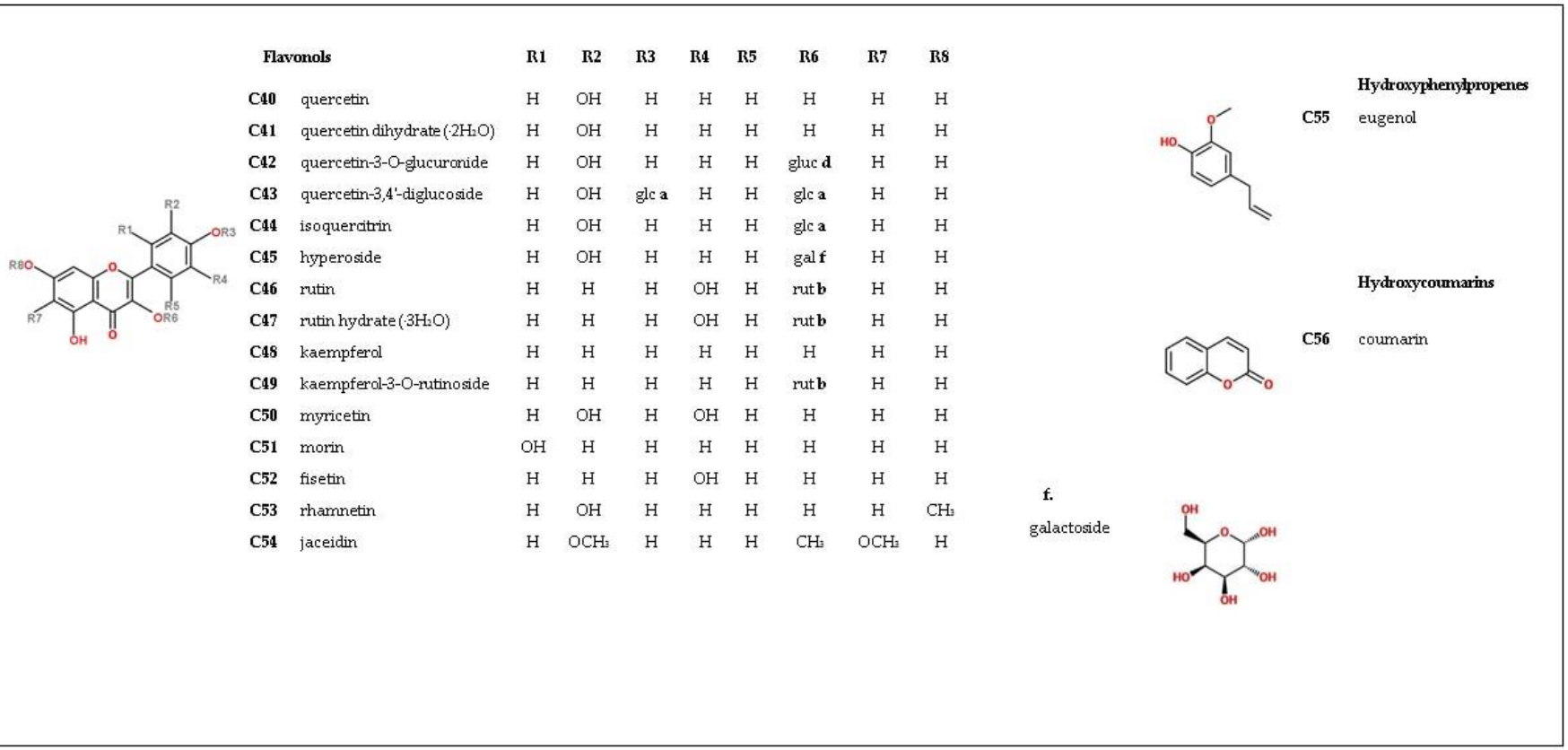
(**a**)

Figure S1. (**a**) The chemical structures of the analytical standards or the most abundant polyphenols in the analysed species.



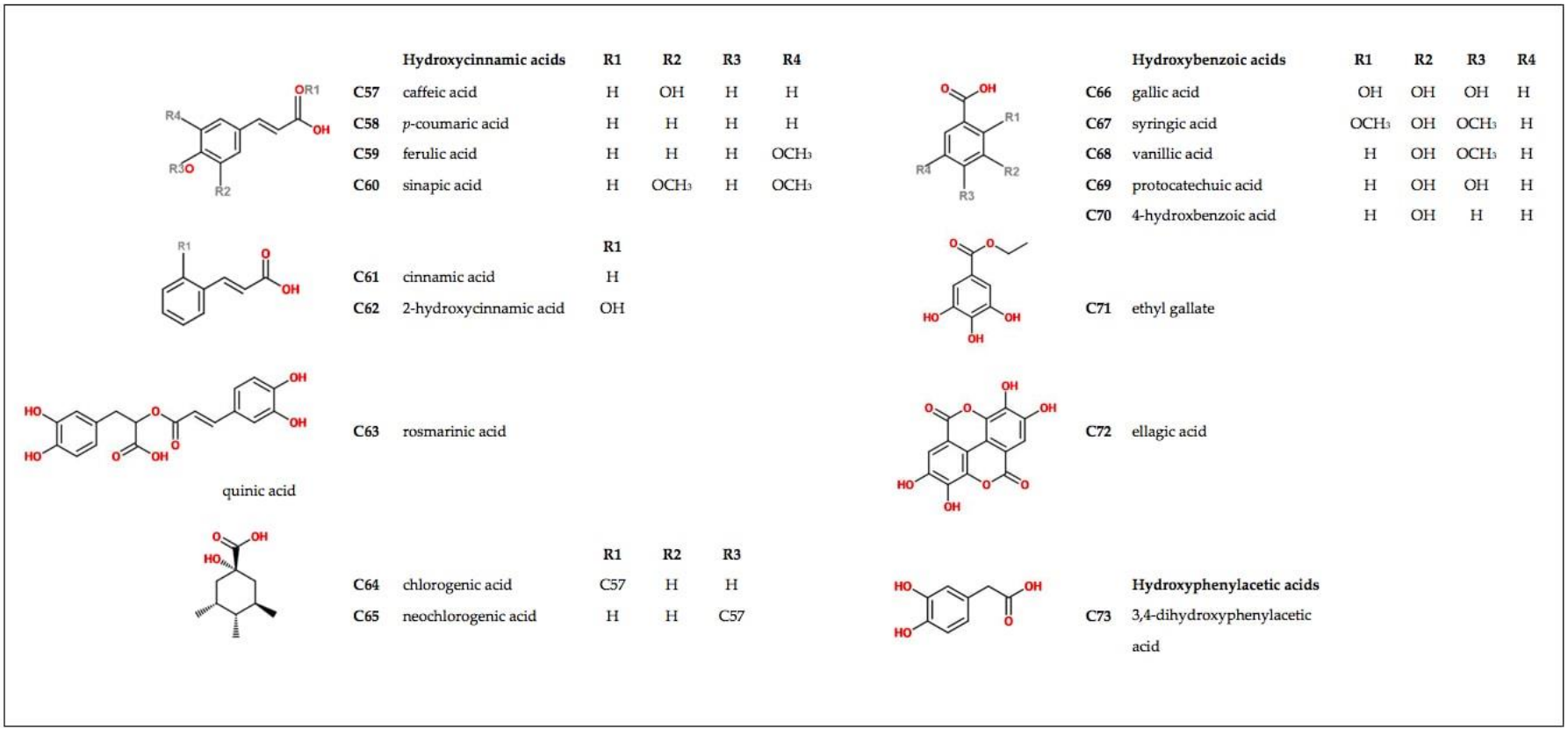
(**b**)

Figure S1. (**b**) The chemical structures of the analytical standards or the most abundant polyphenols in the analysed species.



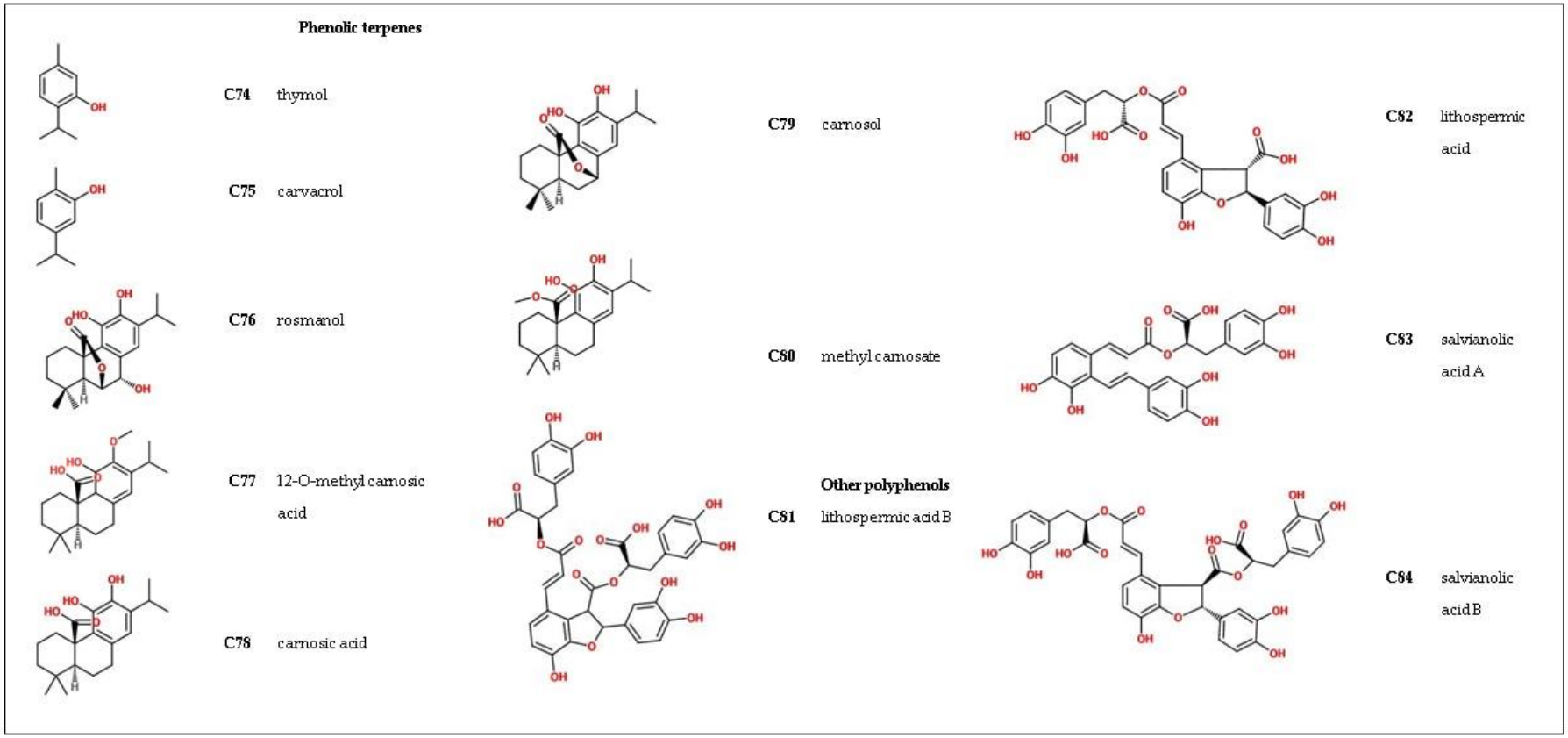
(**c**)

Figure S1. (**c**) The chemical structures of the analytical standards or the most abundant polyphenols in the analysed species.



(**d**)

Figure S1. (**d**)The chemical structures of the analytical standards or the most abundant polyphenols in the analysed species.



(e)

Figure S1. (**e**) The chemical structures of the analytical standards or the most abundant polyphenols in the analysed species.

Table S1. (Poly) phenolic compounds identified for the first time in the different researches of Table 2.

***Lamiaceae* herbs**	**(Poly) phenolic compounds identified for the first time**	**Reference**
Origanum vulgare	1. apigenin-C-hexoside-C-hexoside	[11]
Mentha australis R. Br Identified for the first time in *Mentha* genus.	1. neoponcirin 2. biochanin A	[65]
Tunisian *Mentha pulegium*	1. salvianolic acid B 2. salvianolic acid E 3. isosalvianolic acid B 4. salvialonolic acid I 5. salvianolic acid H 6.lithospermic acid 7. luteolin-6,8-C-dihexose 8. syringetin 9. quercetin, 10. dimethyl ether 11. 2 jaceidin isomers 12. hydroxybenzoic acid hexose isomers 13. dihydroxybenzoic acid hexose 14.vanillic acid hexose 15. syringic acid hexose	[52]
Thymus serpyllum	1. protocatechuic acid 2. protocatechuic acid-hexoside 3. gallic acid 4. rosmarinic acid-glucoside 5. apigenin 6, 8-di-C-glucoside 6. apigenin O-glucuronide 7. luteolin-O-diglucuronide 8. naringin 9. kaempferol O-glucuronide 10. methyl kaempferol O-rutinoside	[64]
Thymus x *citriodorus*	1. luteolin-7-O-glucuronide (first time in *Thymus* species) 2. eriodictyol dihexoside with O-glycosidic linkages, (first time in *Thymus* species) 3. eriodictyol-O-monohexosides (2) (first time in *Thymus* species) 4. quercetagetin dimethyl ether-O-hexoside (1) (first time in *Thymus* species) 5. naringenin-O-hexoside (1) (first time in *Thymus* species) 6. chrysoeriol-7-β-O-glucoside (first time in *Thymus* species) 7. apigenin-7-β-O-glucuronide (first time in *Thymus* x *citriodorus*)	[59]
Thymus vulgaris	1. lithospermic acid B	[2]
Thymus vulgaris	1. sinapic acid-C-hexoside	[11]

Origanum majorana	1. lithospermic acid B	[2]
Tunisian *Origanum majorana*	1.kaempferol-O-glucuronide 2. sakuranetin 3. salvialonolic acid I 4. luteolin-6,8-C-dihexose (first time in *Origanum majorana* species) 5. taxifolin (and two isomer derivatives) 6. dihydrokaempferide 7. luteolin-O-glycoside 8. kaempferol-O-sambubioside (not reported in the literature before) 9. luteolin glucoside 10. syringetin 11. quercetin, 12. dimethyl ether 13. 2 jaceidin isomers 14. hydroxybenzoic acid hexose isomers 15. dihydroxybenzoic acid hexose 16. vanillic acid hexose 17. syringic acid hexose	[52]
Satureja hortensis	1. lithospermic acid B	[2]
Rosmarinus officinalis	1. sinapic acid-C-hexoside 2. apigenin-C-hexoside-C-hexoside	[11]
Rosmarinus officinalis Branded extract	1. dihydroxy-dimethoxyflavone derivative 2. dihydroxy-dimethoxyflavone 3. medioresinol derivative 4. dihydroxy-dimethoxyflavone 5. medioresinol-glucuronide 6. isorhamnetin-rutinoside 7. hispidulin-rutinoside 8. 5,6,7,10-tetrahydro-7-hydroxy rosmariquinone derivative 9. isosakuranetin 10. carnosic acid hexoside 11. 5,6,7,10-tetrahydro-7-hydroxyrosmariquinone derivative 12. carnosic acid derivative 13. 40-Methoxytectochrysin 14. 5,6,7,10-tetrahydro-7-hydroxy rosmariquinone	[53]
Satureja montana ssp. *kitaibelii*	1. quinic acid 2. dihydroxybenzoic acid glucoside isomer 1 3. dihydroxybenzoic acid glucoside isomer 2 4. caffeoylquinic acid isomer 1 5. luteolin-7-O-b-glucopyranoside 6. chlorogenic acid 7. caffeoylquinic acid isomer 3 8. caffeoylquinic acid methyl ester 9. dihydroferulic acid 4-O-glucuronide/ 3-methoxy-4,5-dihydroxycinnamic acid glucoside 10. quercetagetin 7-β-D-glucoside 11. quercetin 3-β-D-glucoside 12. acacetin-rutinoside isomer 2 13. apigenin-6,8-di-C-β-D-glucopyranoside/ luteolin-7-O-β-D-rutinoside 14. luteolin-7-β-D-glucuronide	[55]

	15. kaempferol 3-O-glucoside 16. patuletin 7-glucoside 17. dicaffeoylquinic acid isomer 1 18. dicaffeoylquinic acid isomer 2 19. dicaffeoylquinic acid isomer 3 20. apigenin-7-O-β-D-rutinoside 21. 4-succinyl-3,5-dicaffeoylquinic acid 22. kaempferol-7-O-rhamnoside 23. dicaffeoylquinic acid isomer 4 24. chrysoeriol 7-O-β-D-glucoside 25. kaempferol 3-O-β-D-glucopyranoside 6″-(3-hydroxy-3-methylglutarate) 26. acacetin 7-O-rhamnosylgalacturonide 27. 3,4-dihydroxyphenylacetic acid methyl ester 28. kaempherol/luteolin 29. quercetin 3′-methyl ether/6-methoxyluteolin 30. quercetin 3′-methyl ether/6-methoxyluteolin 31. tetrahydroxy-dimethoxyflavone 32. apigenin 33. luteolin methyl ether isomer 1 34. luteolin methyl ether isomer 2 35. 5,6,4′-Trihydroxy-7,3′-dimethoxyflavone/thymusin 36. 5,6,4′-Trihydroxy-7,3′-dimethoxyflavone/thymusin 37. trihydroxy-trimethoxyflavone isomer 1 38. trihydroxy-trimethoxyflavone isomer 2 39. scutellarein dimethyl ether isomer 1 40. dihydroxy-trimethoxyflavone 41. 8-methoxycirsilineol 42. scutellarein dimethyl ether isomer 2	
10 *Salvia* ssp. Identified for the first time in *Salvia* spp. (in different species / with different extraction solvents).	1. ethyl gallate 2. 3′,4′,5′,7′-tetraxy droxy-3-methoxyflavone 3. hyperoside 4. isorhamnetin-glucoside 5. quercetin 3-glucuronide 6. rhamnetin 7. diosmetin	[3]