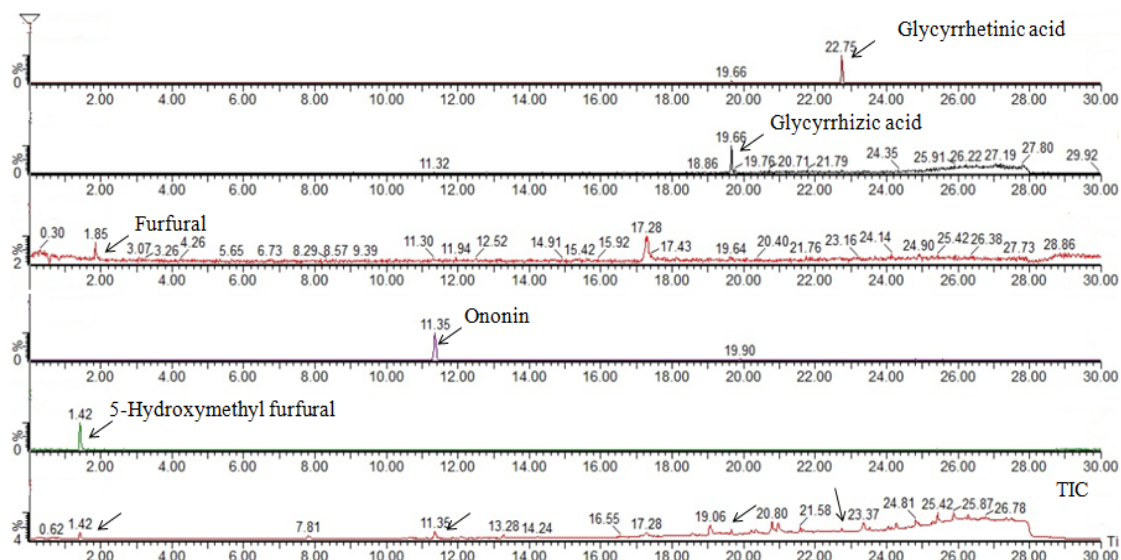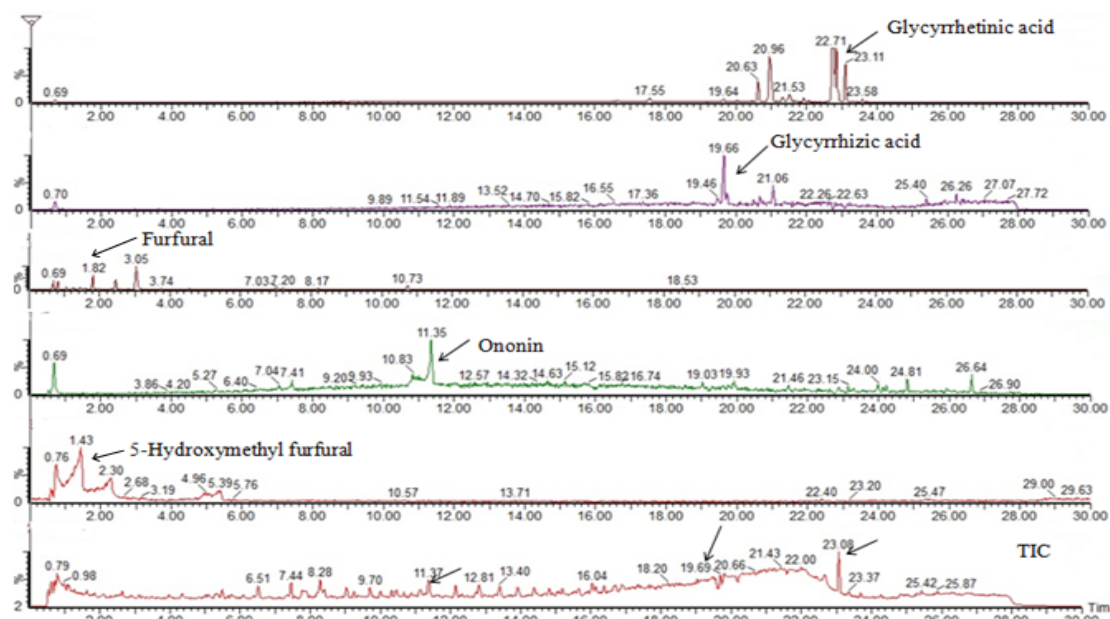# The Maillard and hydrolytic reactions in subcritical water extraction of bioactive compounds from liquorice
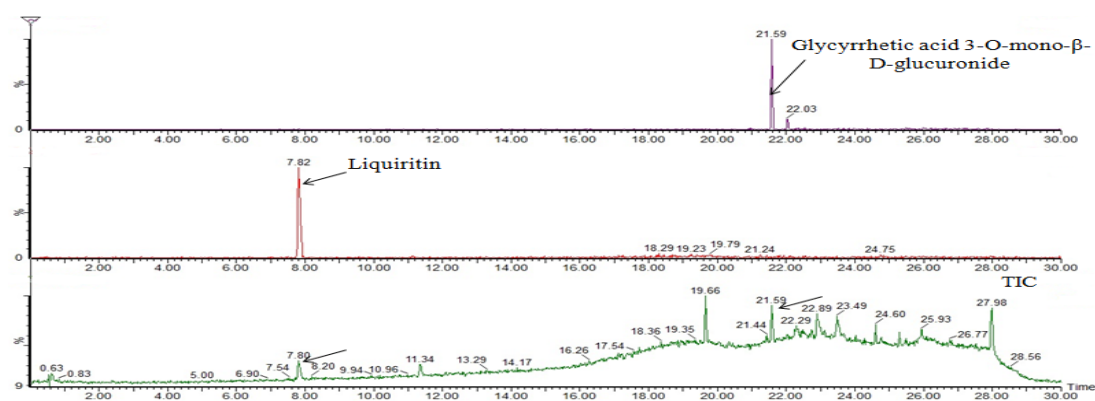
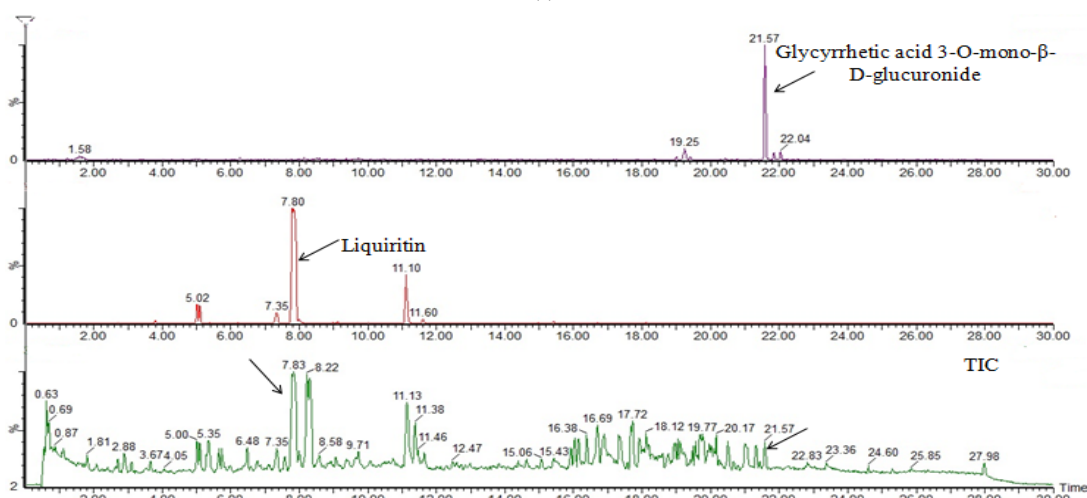Running title: The reactions in subcritical water extraction of bioactive compounds from liquorice

(a)

(b)

(c)

(d)

Figure S1. UPLC-MS profiles of bioactive compounds in the liquorice extract and their corresponding standards, the scanning spectra of bioactive compounds (a) and their corresponding standards (b) under the nagative ion mode; the scanning spectra of bioactive compounds (c) and their corresponding standards (d) under positive ion mode.
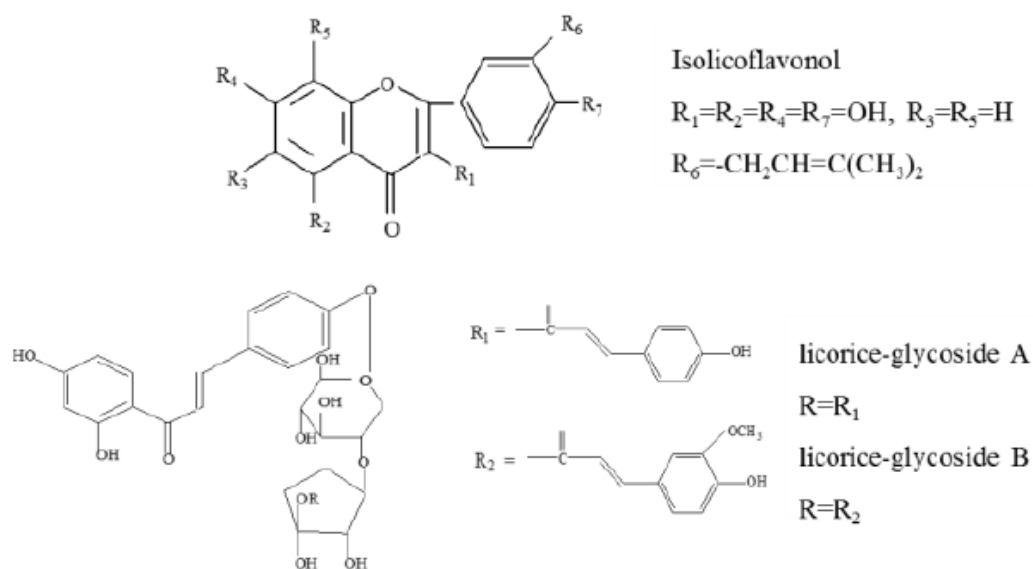

Isolicoflavonol

$R_1=R_2=R_4=R_7=OH$, $R_3=R_5=H$

$R_6=$-$CH_2CH=C(CH_3)_2$

licorice-glycoside A

$R=R_1$

licorice-glycoside B

$R=R_2$

Figure S2. The structures of flavonoids in liquorice

Table S1. Correlation analysis between TP, TF contents and antioxidant activity of liquorice extracts in different range of temperature

Temperature range (°C)	ABTS-TP	ABTS-TF	DPPH-TP	DPPH-TF
80-240 °C	Y=0.124x-0.017	Y=0.262x-0.053	Y=0.15x-0.046	Y=0.07x-0.024
	R^2=0.941	R^2=0.943	R^2=0.935	R^2=0.920
240-280 °C	Y=-0.002x+0.506	Y=-0.405x+1.827	Y=-0.23x+0.738	Y=-0.285x+1.22
	R^2=0.005	R^2=0.852	R^2=0.083	R^2=0.889

Table S2. The effect of extraction temperature on the content of total flavonoids, total phenolics and total antioxidant activity.

Temperature(℃)	Contents (g/100g dry basis)		Trolox equivalent antioxidant capacities (mmol/g dry basis)	
	Total phenolics	Total flavonoids	DPPH	ABTS
80	0.253 ± 0.002^a	0.235 ± 0.007^a	0.013 ± 0.001^a	0.029 ± 0.001^a
100	0.310 ± 0.004^b	0.291 ± 0.0001^b	0.015 ± 0.001^a	0.036 ± 0.001^a
120	1.190 ± 0.002^c	0.721 ± 0.003^c	0.028 ± 0.001^b	0.050 ± 0.002^b
140	1.890 ± 0.003^g	1.025 ± 0.003^d	0.095 ± 0.002^c	0.238 ± 0.010^c
160	3.004 ± 0.006^h	1.465 ± 0.097^g	0.153 ± 0.002^e	0.388 ± 0.001^e
180	4.060 ± 0.003^l	1.977 ± 0.048^{hi}	0.211 ± 0.005^f	0.396 ± 0.001^e
200	4.230 ± 0.001^n	1.954 ± 0.005^{hi}	0.300 ± 0.001^{hi}	0.516 ± 0.018^h
220	4.081 ± 0.010^m	2.162 ± 0.011^k	0.295 ± 0.004^h	0.513 ± 0.004^h
240	3.391 ± 0.001^k	1.985 ± 0.004^i	0.255 ± 0.002^g	0.459 ± 0.003^f
260	3.240 ± 0.002^j	1.923 ± 0.001^h	0.294 ± 0.005^h	0.498 ± 0.002^g
280	3.223 ± 0.020^i	2.038 ± 0.044^j	0.309 ± 0.010^i	0.544 ± 0.002^i
300	1.562 ± 0.004^f	1.341 ± 0.001^f	0.135 ± 0.002^d	0.273 ± 0.003^d
320	1.462 ± 0.005^e	1.145 ± 0.001^e	0.126 ± 0.022^d	0.269 ± 0.015^d
340	1.442 ± 0.003^d	1.150 ± 0.002^e	0.136 ± 0.002^d	0.270 ± 0.008^d

The results were expressed as mean ± standard deviation (n=3), the different letters indicated that the difference was significant ($P < 0.05$) and the same letter was expressed as insignificant difference