H. TAVALLALI *et al.* Urinary and Vegetable Oxalate Determination with Colorimetric Chemosensor, Food Technol. Biotechnol. 56 (3) S1 (2018)

S1

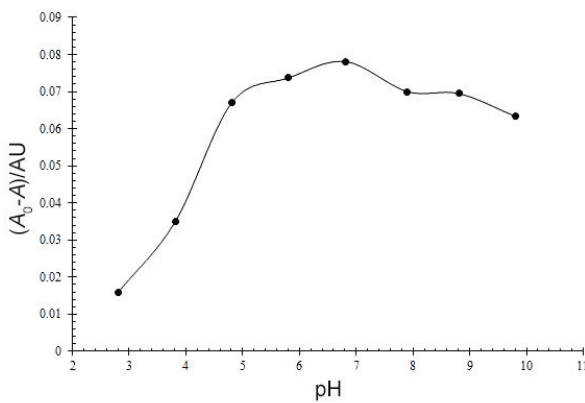**Fig. S1.** Molar ratio curve: absorbance at 607 nm *vs.* metal ion to ligand ratio. RB4=Reactive Blue 4

Fig.S2. The calculation of the association constant (K_{ass}) of [Cu-C_2O_4] complex by using Microsoft excel solver

Fig. S3. Effect of the pH on the absorbance changes of [RB4-Cu^{2+}] complex in the presence of oxalate (50 µmol/L) at 607 nm in 10 mmol/L HEPES buffer solution, pH=7. RB4=Reactive Blue 4 dye
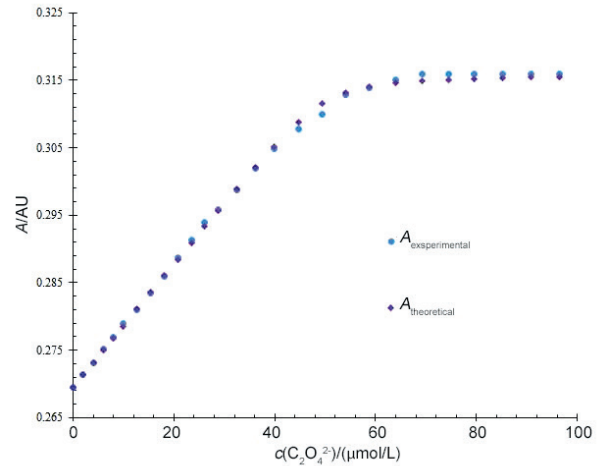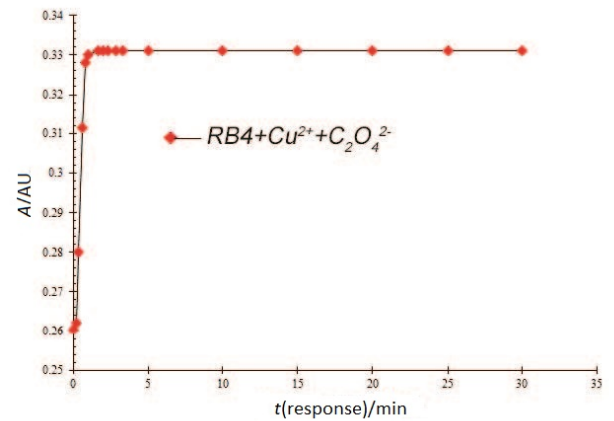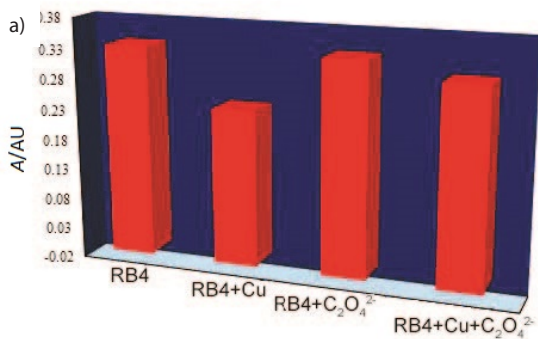

Fig. S4. UV-Vis spectral changes of [RB4-Cu^{2+}] complex after the addition of oxalate (50 µmol/L) during 30 min. RB4=Reactive Blue 4 dye

a)

c)

b)

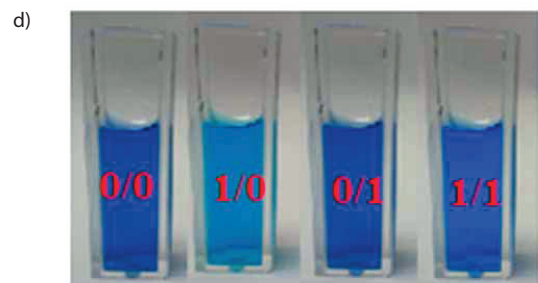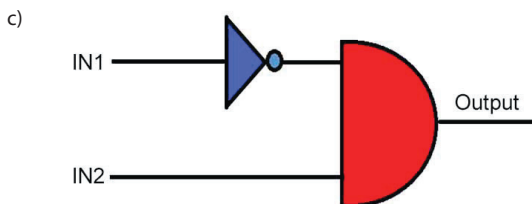| Truth table (IMPLICATION gate)			
Input 1	Input 2	Output	Value
Cu^{2+}	$C_2O_4^{2-}$	Colour	$A_{607\,nm}$
0	0	1 (dark blue)	1 (high)
1	0	0 (deep sky blue)	0 (low)
0	1	1 (dark blue)	1 (high)
1	1	1 (dark blue)	1 (high)

d)

Fig. S5. Illustration of IMPLICATION logic gate: a) $A_{607\,nm}$ value of different inputs based on UV-Vis absorption, b) and c) truth table and scheme of IMPLICATION logic gate, and d) colour change of Reactive Blue 4 dye (RB4) in the response to different inputs
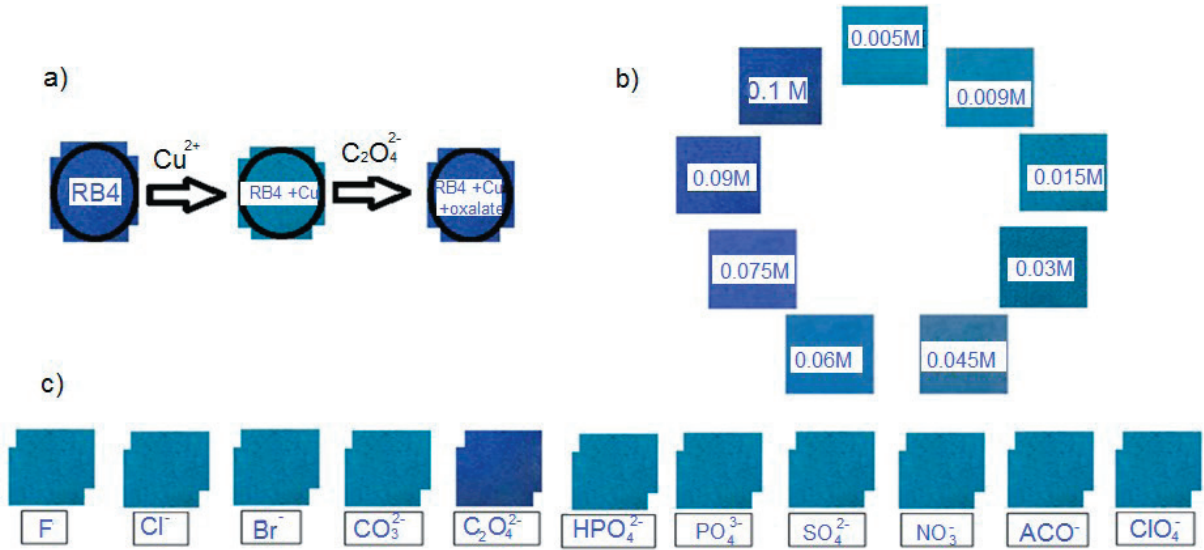
H. TAVALLALI *et al.* Urinary and Vegetable Oxalate Determination with Colorimetric Chemosensor, Food Technol. Biotechnol. 56 (3) S1 (2018)

S1

Fig. S6. Detection process of the proposed colorimetric sensor based on indicator displacement assay (IDA) strategy for the determination of oxalate by test paper (a), photographs of the test paper after immersing into the different concentration of oxalate (b), photographs of test paper coated with RB4-Cu^{2+} complex immersed in different anions (c). RB4=Reactive Blue 4 dye
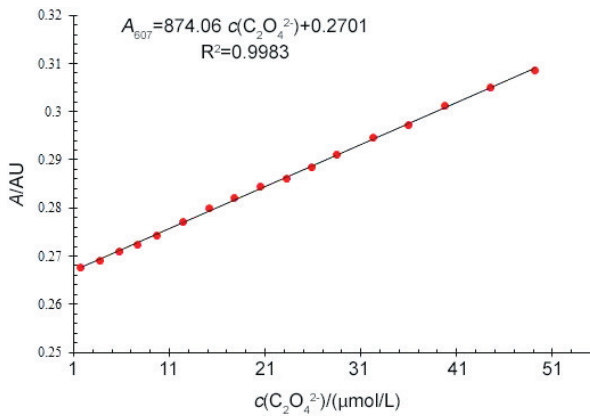

Fig. S7. The linearly proportional relationship between the absorbance of RB4-Cu^{2+} complex solution at 607 nm and the concentration of oxalate ion. RB4=Reactive Blue 4 dye
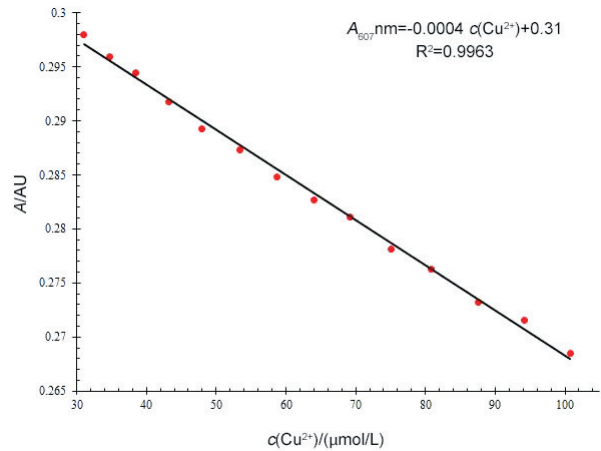
$A_{607} = 874.06\, c(C_2O_4^{2-}) + 0.2701$
$R^2 = 0.9983$

Fig. S8. The linearly proportional relationship between the absorbance of RB4 solution at 607 nm and the concentration of Cu^{2+}. RB4=Reactive Blue 4 dye

$A_{607}\text{nm} = -0.0004\, c(Cu^{2+}) + 0.31$
$R^2 = 0.9963$