Electronic Supplementary Material (ESI) for RSC Advances.

3-HYDROXYFLAVONE IS A MILDLY ACTIVE AND SAFE COBALT CHELATOR WHILE COBALT MARKEDLY ENHANCES BAICALEIN TOXICITY TOWARD ERYTHROCYTES

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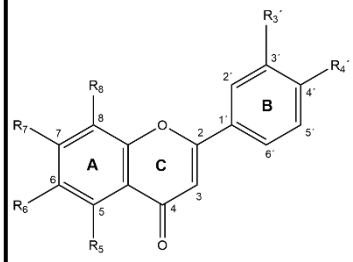
SUPPLEMENTARY DATA

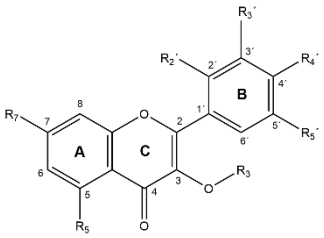
4 PAGES

A



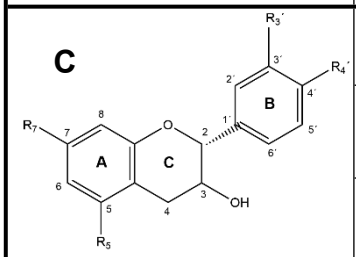
flavones	R_5	R_6	R_7	R_8	R_3'	R_4'
baicalein	OH	OH	OH	H	H	H
baicalin	OH	OH	O-Glu	H	H	H
diosmin	OH	H	O-Glc-Rha	H	OH	OCH_3
chrysin	OH	H	OH	H	H	H
flavone	H	H	H	H	H	H
5-hydroxyflavone	OH	H	H	H	H	H
7-hydroxyflavone	H	H	OH	H	H	H
7,8-dihydroxyflavone	H	H	OH	OH	H	H

B



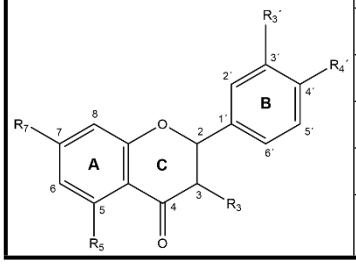
flavonols	R_3	R_5	R_7	R_2'	R_3'	R_4'	R_5'
3-hydroxyflavone	H	H	H	H	H	H	H
kaempferol	H	OH	OH	H	H	OH	H
morin	H	OH	OH	OH	H	OH	H
myricetin	H	OH	OH	H	OH	OH	OH
isorhamnetin	H	OH	OH	H	OCH_3	OH	H
quercetin	H	OH	OH	H	OH	OH	H
rutin	Glc-Rha	OH	OH	H	OH	OH	H
troxerutin	Glc-Rha	OH	O-C_2H_4-OH	H	O-C_2H_4-OH	O-C_2H_4-OH	H

C



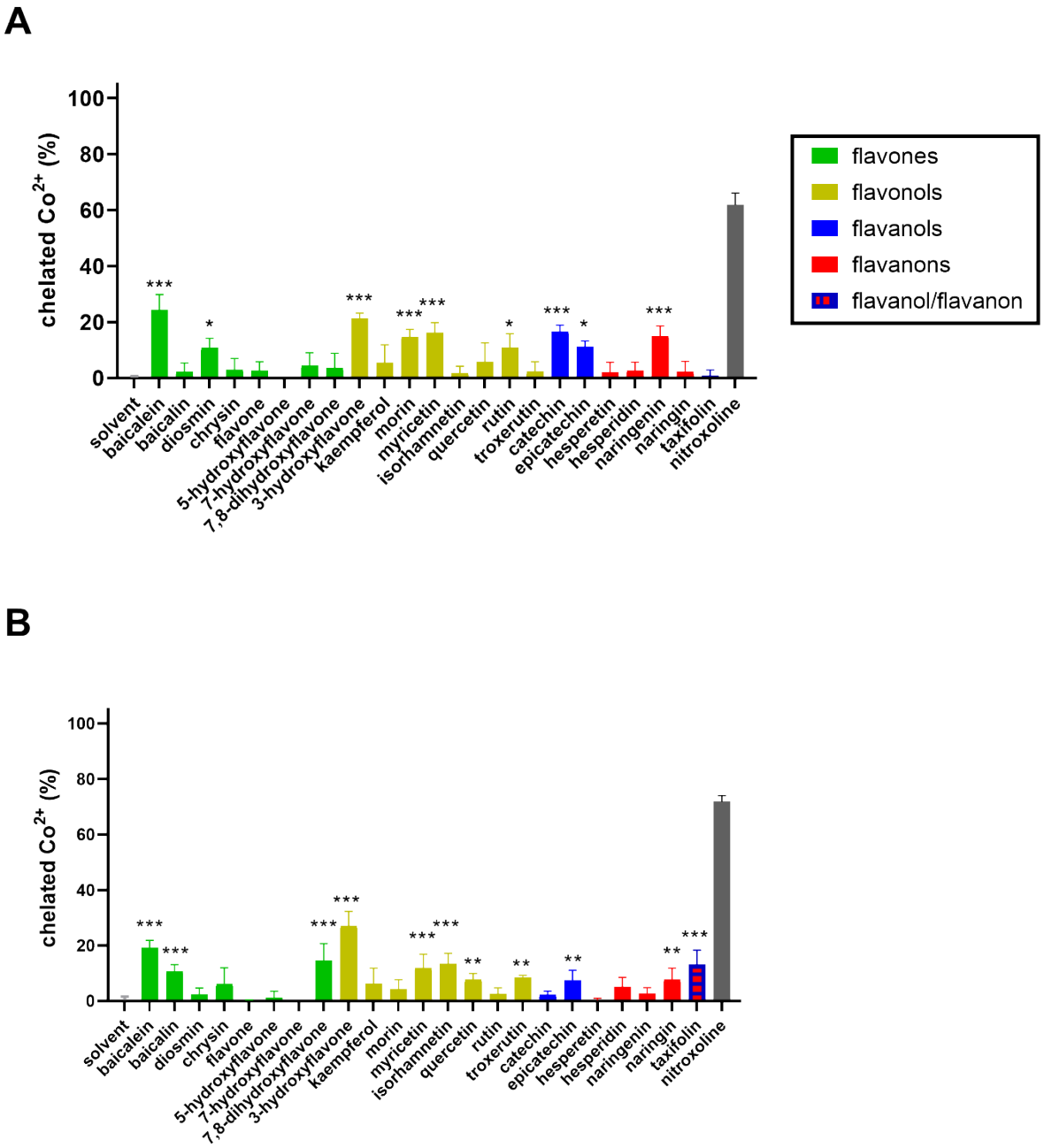
flavanols	R_5	R_7	R_3'	R_4'	configuration
(+)-catechin	OH	OH	OH	OH	2R, 3S
(-)-epicatechin	OH	OH	OH	OH	2R, 3R

D

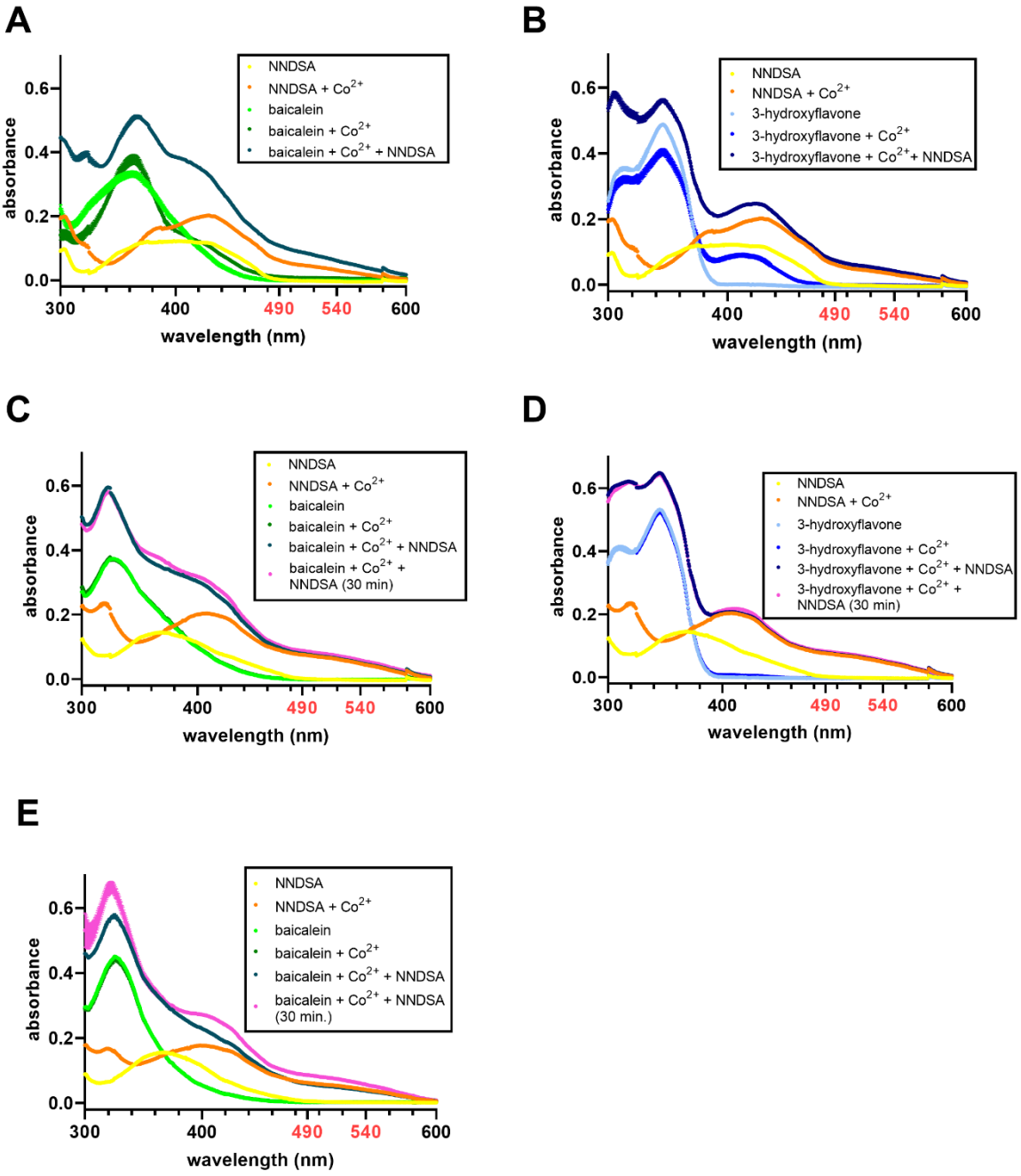


flavanones	R_3	R_5	R_7	R_3'	R_4'	configuration
hesperetin	H	OH	OH	OH	OCH_3	2S
hesperidin	H	OH	O-Glc-Rha	OH	OCH_3	2S
naringenin	H	OH	OH	H	OH	2RS
naringin	H	OH	O-Glc-Rha	H	OH	2RS
taxifolin*	OH	OH	OH	OH	OH	2R, 3R

Suppl. Fig. 1 – Chemical structure of tested flavonoids: A: flavones; **B:** flavonols; **C:** flavanols; **D:** flavanones; *taxifolin can be classified as both, flavanol and flavanone; Glc – glucose, Rha – rhamnose, Glu – glucuronic acid. Structures were created by ChemDraw, version 20.0.



Suppl. Fig. 2 – Chelation ability of tested flavonoids at pH 7.5 (A) or at pH 6.8 (B): The ratio of tested flavonoids:cobalt ions was 5:1. Data were analysed from measurement at a wavelength of 540 nm. Nitroxoline was used a positive control, while the solvent DMSO as negative control. All compounds were less active than nitroxoline at both conditions ($p<0.001$, not shown in the graph). * $p<0.05$ vs. solvent, ** $p<0.01$ vs. solvent, *** $p<0.001$ vs. solvent.



Suppl. Fig. 3 – Spectra of baicalein (A, C, E) and 3-hydroxyflavone (B, D) with/without cobalt and with the indicator NNDSA at pH 7.5 (A, B), 6.8 (C, D) and 5.5 (E): The final concentration of cobalt was 50 µM, flavonoids 250 µM (ratio flavonoid:cobalt ions was 5:1), and NNDSA 300 µM. Based on the spectra of flavonoids and their complexes with cobalt, no interference with the NNDSA competitive method was noticed as there was no absorption at 490 or 540 nm. Spectra are averages of three independent experiments (different solutions).