

## Supporting Information

# Synthesis of Hybrid Polyphenol/Hydroxyapatite Nanomaterials with Anti-Radical Properties

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**Figure S1.** N<sub>2</sub> sorption isotherm of hydroxyapatite nanoparticle powder.

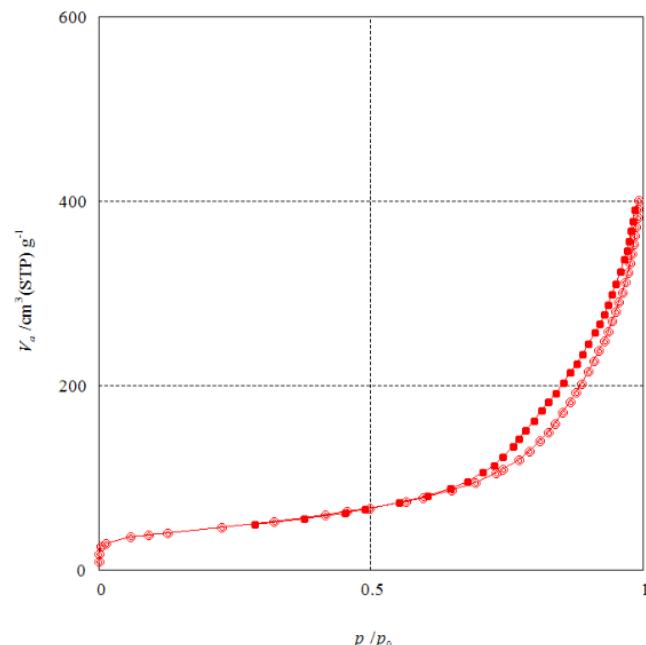
**Figure S2.** TGA analyses of hydroxyapatite nanoparticles before and after adsorption of polyphenols.

**Figure S3.** TGA analyses of hydroxyapatite nanoparticles synthesized in presence of polyphenols.

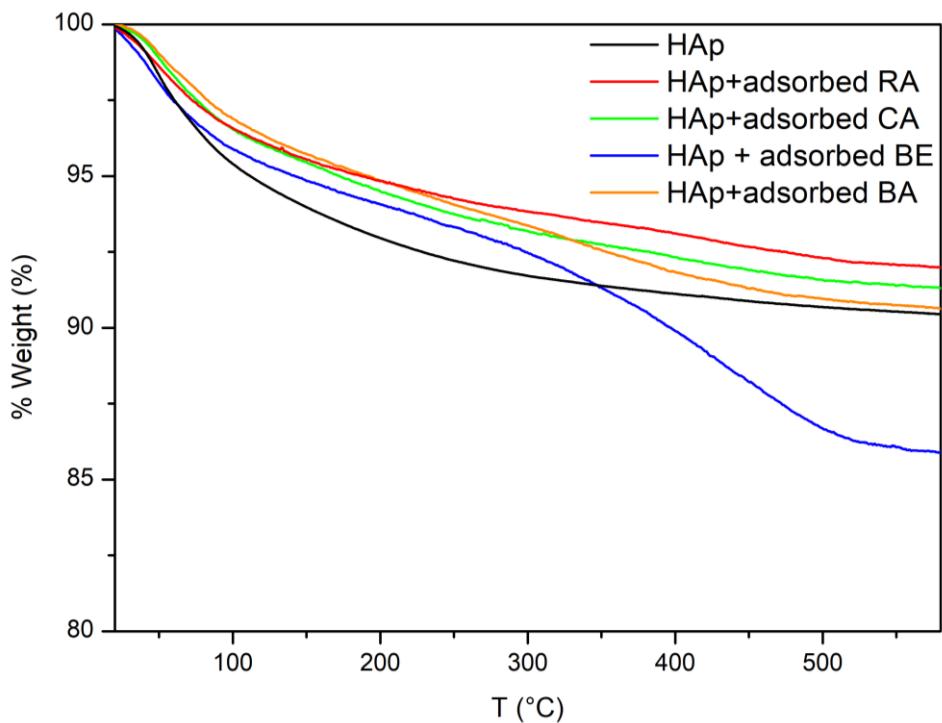
**Figure S4.** Stability of (a) RA, (b) CA, (c) BE and (d) BA at pH 12.

**Figure S5.** XRD of powder recovered after 30 min in solution of Ca(OH)<sub>2</sub> and Ca(OH)<sub>2</sub> + RA, and comparison with XRD of calcite (PDF card 05-0586).

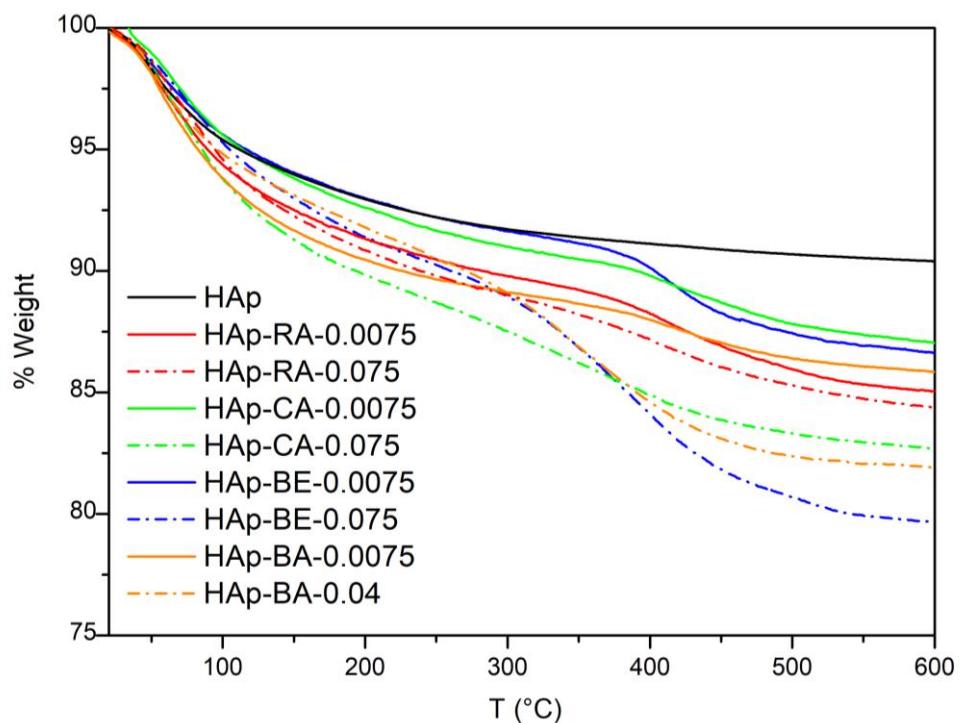
**Table S1.** Synthesis of HAp NPs in presence of polyphenols at 0.05 mM and 0.5 mM: yield, particles dimensions as measured from TEM, crystallite size calculated from XRD data, incorporated quantity measured from TGA and estimated final polyphenol: Ca molar ratio.



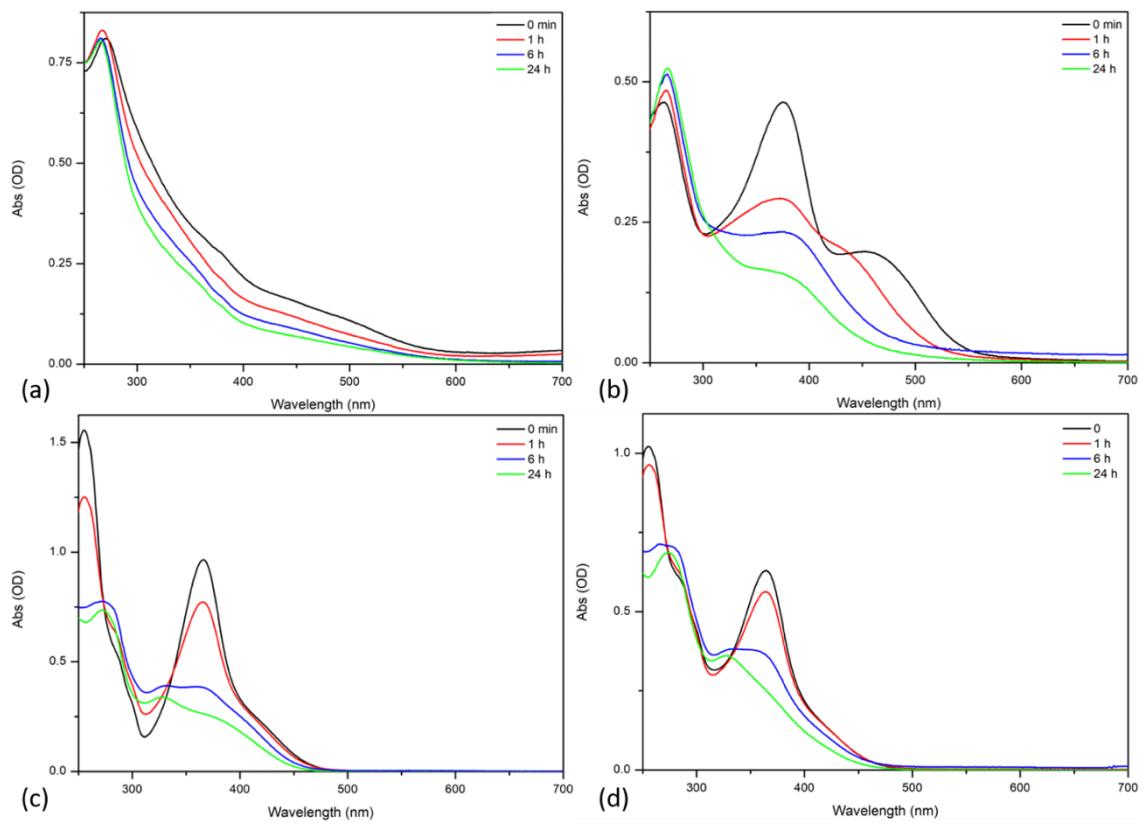
**Figure S1.** N<sub>2</sub> sorption isotherm of hydroxyapatite nanoparticle powder.



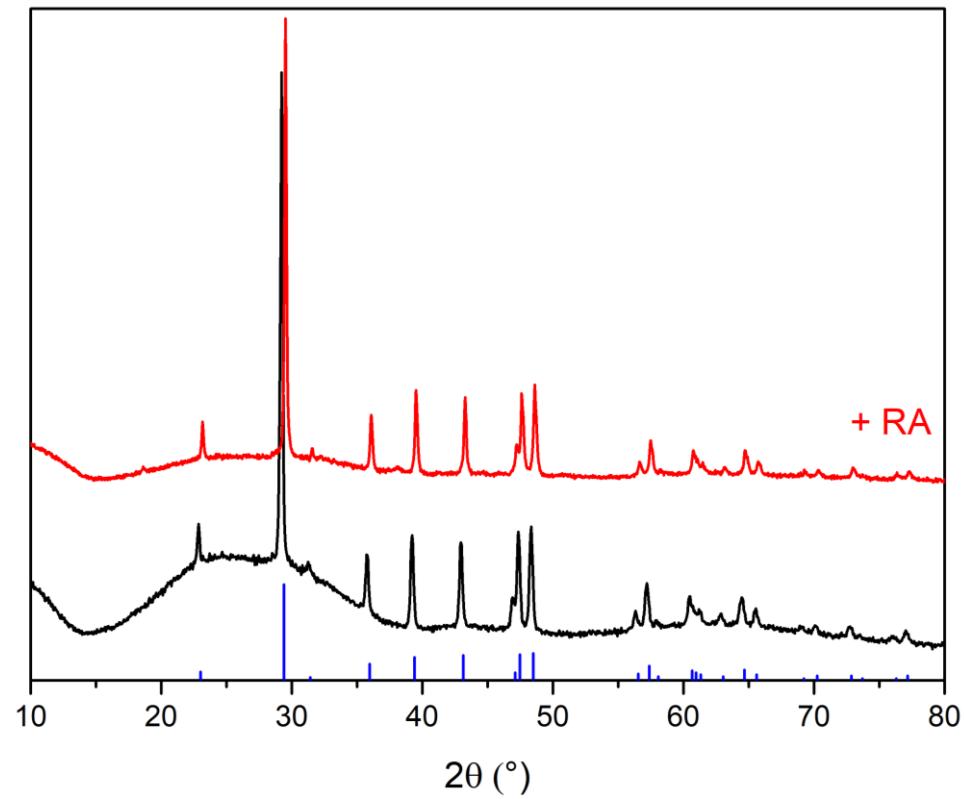
**Figure S2.** TGA analyses of hydroxyapatite nanoparticles before and after incorporation of polyphenols.



**Figure S3.** TGA analyses of hydroxyapatite nanoparticles when polyphenols are incorporated during synthesis.



**Figure S4.** Stability of (a) RA, (b) CA, (c) BE and (d) BA at pH 12.



**Figure S5.** XRD of powder recovered after 30 min in solution of  $\text{Ca}(\text{OH})_2$  and  $\text{Ca}(\text{OH})_2 + \text{RA}$ , and comparison with XRD of calcite (PDF card 05-0586).

**Table S1.** Synthesis of HAp NPs in presence of polyphenols at 0.05 mM and 0.5 mM: yield, particles dimensions as measured from TEM, crystallite size calculated from XRD data, incorporated quantity measured from TGA and estimated final polyphenol: Ca molar ratio.

Sample	Initial concentration of polyphenol (mM)	Yield (%)	Particle length/width (nm)	Crystallite size (nm)	Incorporated quantity (mg.g <sup>-1</sup> )	Final molar ratio polyphenol : Ca
<b>HAp</b>	-	66	30±7/8±4	15±3	-	-
<b>HAp-RA</b>	0.05	46	14±2/4.2±0.5	16±1	52	0.015
	0.5	-	-	-	-	-
<b>HAp-CA</b>	0.05	56	19±2/6±2	15±1	42	0.011
	0.5	43	-	14±2	73	0.02
<b>HAp-BA</b>	0.05	46	13±2/4.2±0.5	13±2	54	0.012
	0.5	50	-	18±2	111	0.025
<b>HAp-BE</b>	0.05	53	17±3/7±1	17±1	52	0.02
	0.5	42	-	14±3	135	0.05