Supplementary Information

Catalytic investigation of hyaluronic acid stabilized Ag nanoparticles as non-toxic nanocatalysts in the oxidation of morin

M. Deniz Yilmaz,[ab*] Nezahat Gokce Ozsamur,[bc] Sundus Erbas-Cakmak[bc]

[a] *Department of Basic Sciences, Faculty of Engineering, Necmettin Erbakan University, 42140 Konya, Türkiye*

[b] *BITAM-Science and Technology Research and Application Center, Necmettin Erbakan University, 42140 Konya, Türkiye.*

[c] *Department of Molecular Biology and Genetics, Faculty of Science, Necmettin Erbakan University, 42090 Konya, Türkiye*

[*]Corresponding author: deniz.yilmaz@erbakan.edu.tr; yilmazdnz@gmail.com

Table of Contents

1. The concentration dependent absorption spectra of HA-AgNPs

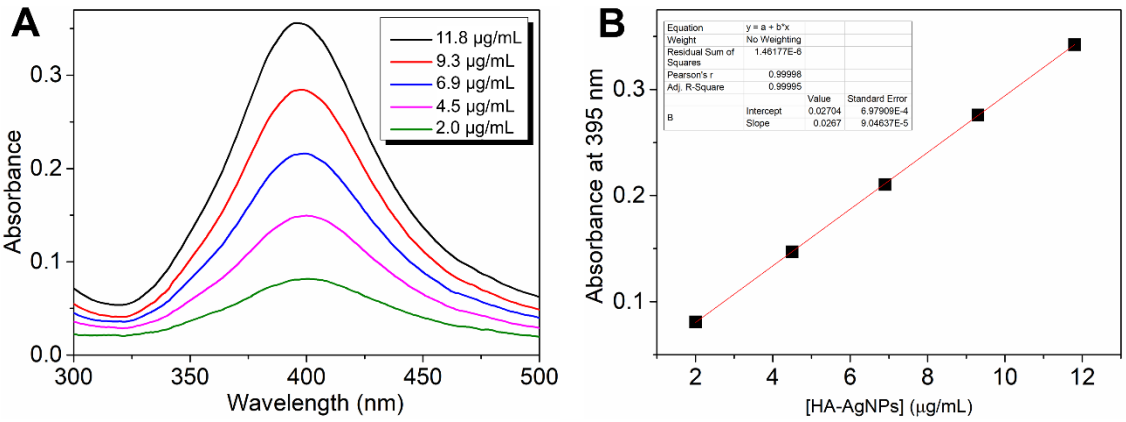

Fig. S1 (A) The concentration dependent UV-vis spectra of HA-AgNPs in H_2O and (B) the plot of the absorbance of HA-AgNPs at 395 nm versus the concentration.

2. FTIR spectra of Hyaluronic acid and HA-AgNPs

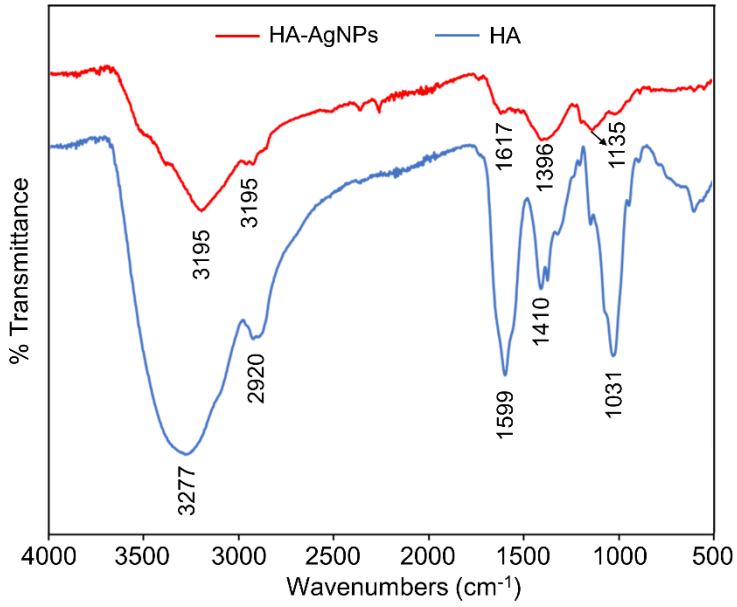

Fig. S2 FTIR spectra of HA and HA-AgNPs.

3. UV-vis spectra of 1,3-diphenylisobenzofuran (DPBF) in the presence and absence of HA-AgNPs

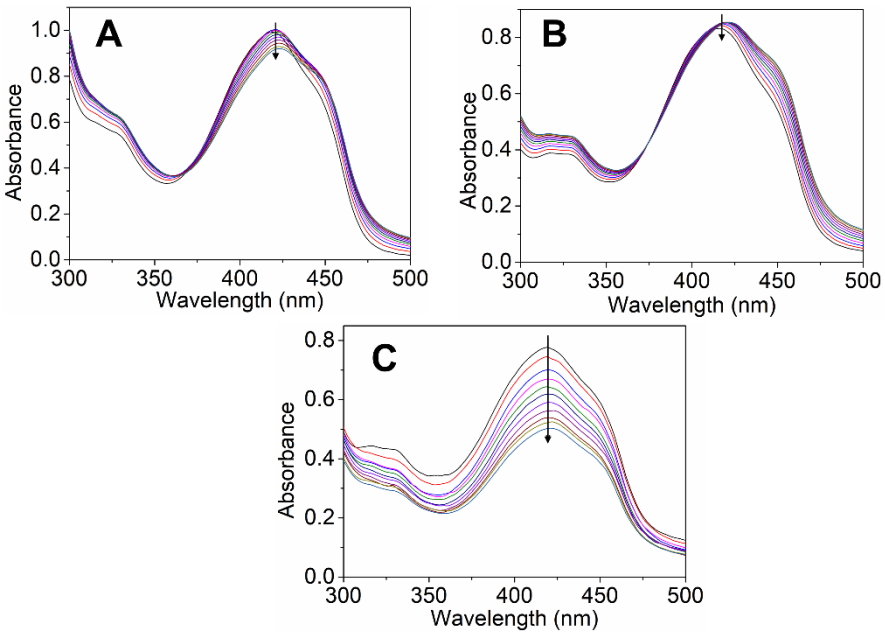

Fig. S3 UV-vis spectra of DPBF in 10 mM carbonate buffer at pH 10 at 298 K (A) in the presence of H_2O_2 (196 mM) and absence of HA-AgNPs; (B) in the presence of HA-AgNPs (4.5 µg/mL) and absence of H_2O_2; (C) in the presence of both HA-AgNPs (4.5 µg/mL) and H_2O_2 (196 mM).

4. Comparison of HA-AgNPs with other nanosystems used for the oxidation of morin reported in the literature

Table S1. Comparison of nanocatalysts in the oxidation of morin

Catalyst	k_{app} (s^{-1} x 10^{-2})	Catalyst concentration	Morin concentration	H_2O_2 concentration	Cytotoxicity, IC_{50}	Reaction time	Ref
HA-AgNPs	1.01	4.5 µg/mL	150 µM	196 mM	> 40 µg/mL	250 s	This work
Que-AgNPs	0.14	16.6 µg/mL	100 µM	490 mM	47.36 µg/mL	1200 s	24
AgDENs	0.0151	490 nM	100 µM	24 mM	na	7000 s	21
CH-AuNPs	0.12	2.5 nM	100 µM	0.49 mM	> 6.8 nM	1800 s	15
Pt_{20}@BSA	0.80	600 nM	125 µM	10 mM	> 2 µM	1200 s	12
MnO_xNP	0.2	770 µg/mL	100 µM	10 mM	na	1800 s	4
Pd_{55}-DENs	0.384	300 nM	900 µM	50 mM	na	1800 s	10
Co^{2+}@PEM-MSNPs	na	133 µg/mL	160 µM	980 mM	na	300 s	13

5. Mass spectrum of degradation products of morin

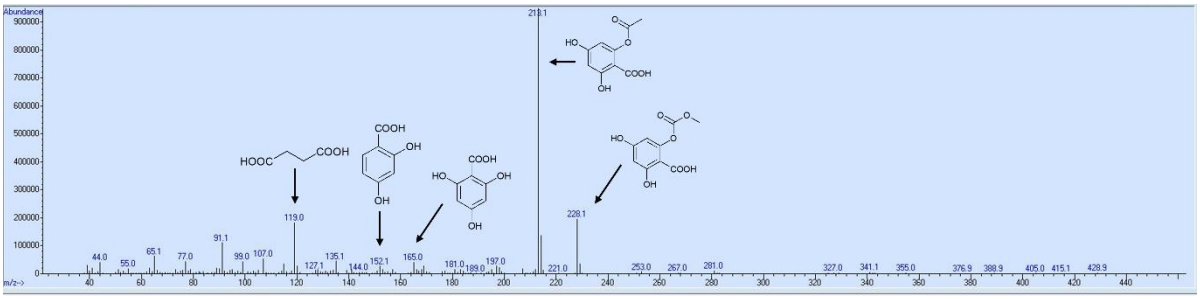

Fig. S4 Mass spectrum of morin after the oxidation by HA-AgNPs in the presence of H_2O_2, collected by GC-MS.

6. Real-time video of the oxidation of morin in the presence of H_2O_2 and HA-AgNPs

Video S1.rar