Supporting Information

Green carbon dot@silver nanoparticles hybrid: as turn-on fluorescent probe for detection and quantification of cholesterol and glucose

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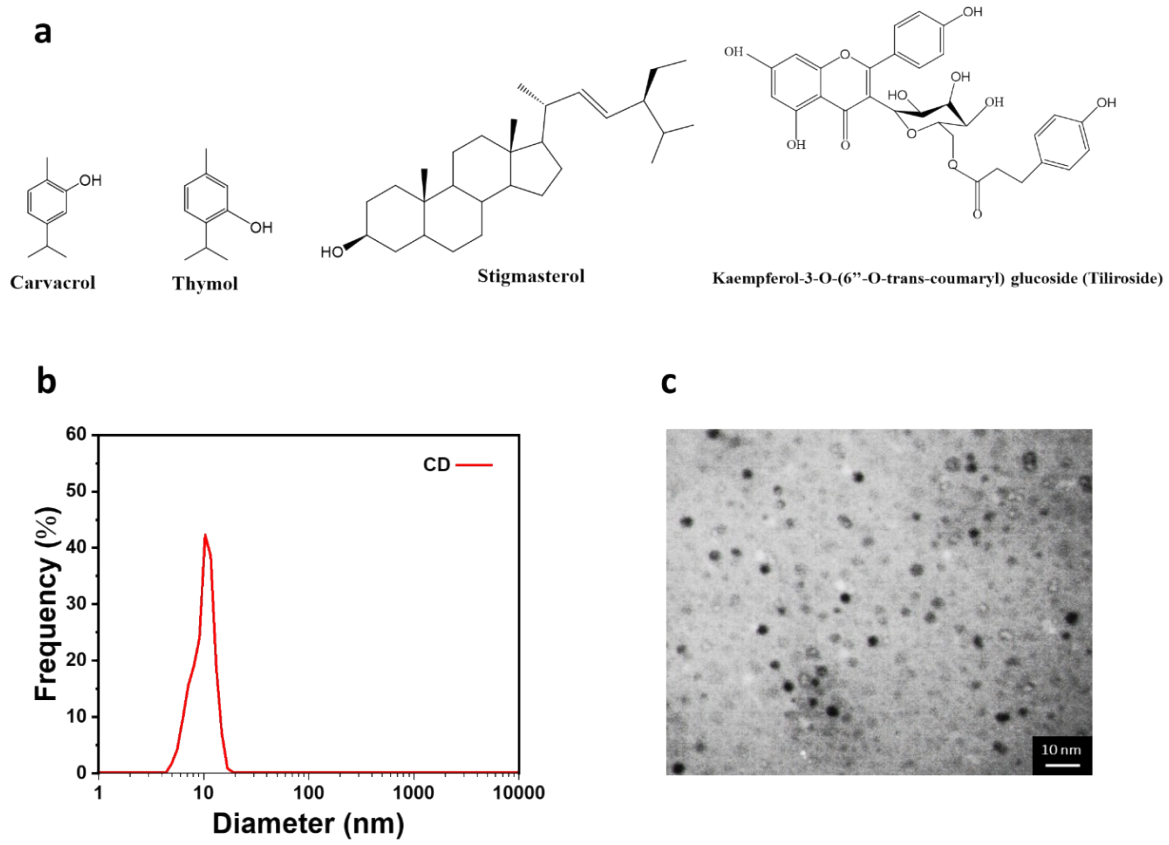
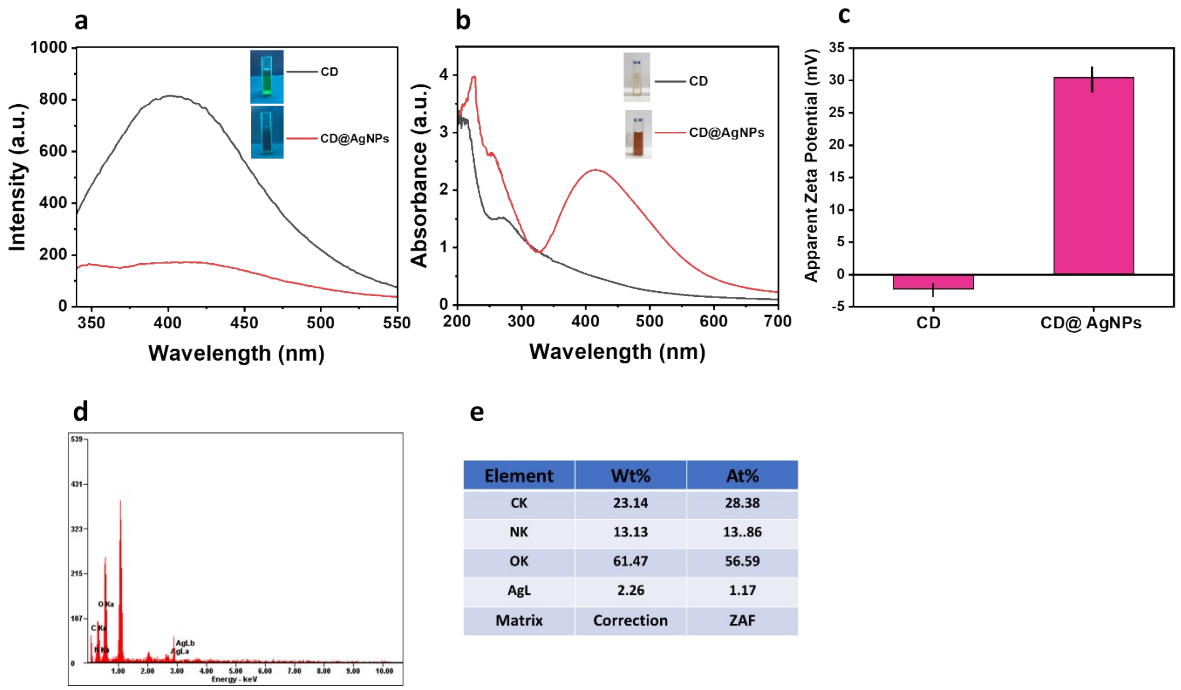


Figure S1. a) Some compounds in the extract of *Oliveria decumbens Vent* as a source of carbon for the green synthesis of CDs, b) DLS analysis and c) TEM image of CD .



Element	Wt%	At%
CK	23.14	28.38
NK	13.13	13..86
OK	61.47	56.59
AgL	2.26	1.17
Matrix	Correction	ZAF

Figure S2. a) fluorescence spectra, λex = 350 nm, λem = 409 nm for CD and CD@AgNPs b) UV-visible spectrum for CD and CD@AgNPs c) ζ-potential diagram for CD and CD@AgNPs d)EDX analysis of CD@AgNPs e) Table of various elements and their respective weight and atomic percentage.

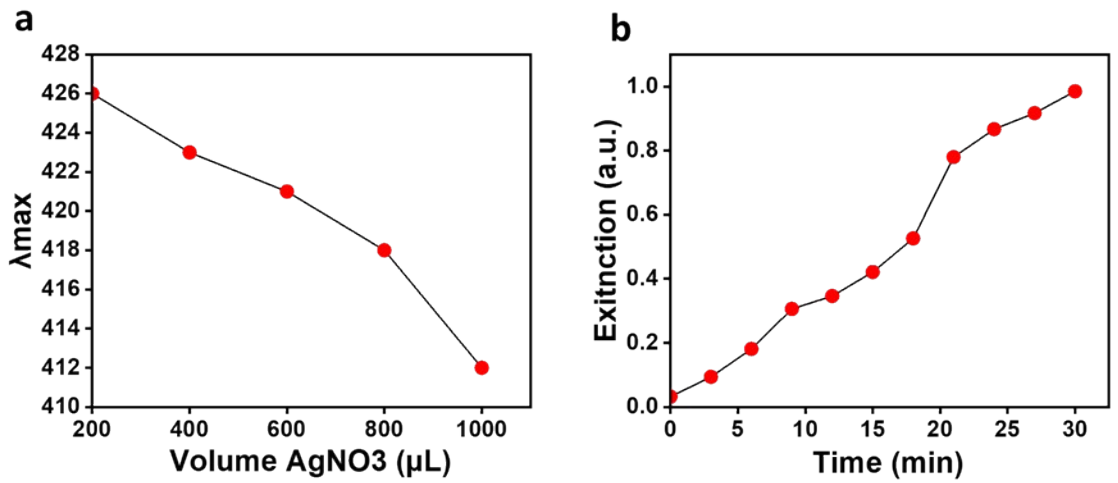


Figure S3. a) Surface plasmon resonance spectrum maximum λ as a function of volume, different volumes of AgNO3 (200, 400, 600, 800, 1000 µL) and 20 mM AgNO3 and volume ratio (1:4) of Ag^{+}: CD were used for synthesis. b) Time evolution over a range of time

(0,3,6,9,12,15,18,21,24,27,30 min) in a volume of 1000 µL AgNO3 and 20 mM AgNO3 and a volume ratio of (1:4) Ag+:CD were used for synthesis.

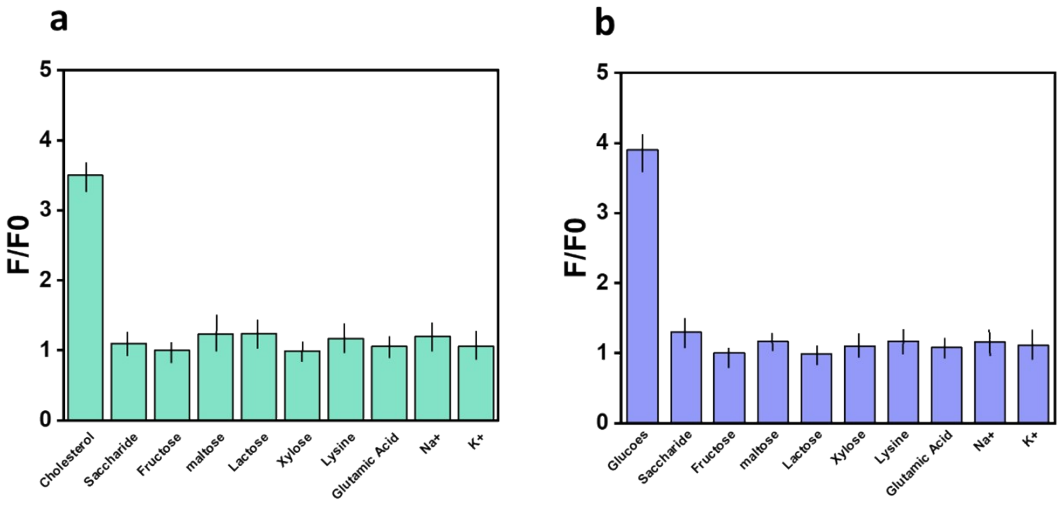


Figure S4. Examining the changes in the ratio of F to F0 in the presence of disturbing factors in the reaction medium a) Fluorescence emission of CD@AgNPs in the presence of a concentration of 60 µM of cholesterol and several potential interferences (such as Na+, K+, maltose, fructose, saccharide and lactose, xylose glutamic acid, lysine) with a concentration of 10 times Cholesterol were considered as interfering samples b) Similarly, in the concentration of 250 µM of Glucose, the presence of interfering factors was checked with a concentration of 10 times that of Glucose.

Table S1. Cholesterol and Glucose recovery percentage by CD@AgNPs assay in blood plasma, analytes and urine.

	Spiked	Recovery (PL)	Recovery (PL) /%
Cholesterol (µM)	20µM	20.85 ±2.11	104. 24 ± 9.23
Glucose (µM)	200µM	209.97 ± 1.89	104.99± 2.71

Table S2. Comparison of different nanomaterials and their analytical performance for glucose and cholesterol detection

Mode of Detection	Nanomaterial Used / Sensing platform	Target	Real Sample	Linear range and LOD	References
Electrochemical	Ag/NSC/ Nafion	Glucose	-------	concentration range 5–3000 μM LOD =46 μM	[1]
Fluorescence	gold nanoclusters (AuNCs) encapsulated with mono-(6-mercapto-6-deoxy)-β-cyclodextrin (SH-β-CD)	Cholesterol	serum	concentration range 20.00 ~ 150.00 μM LOD = 16.07 μM	[2]
Colorimetric	U6NH2@AuNPs-ChOx@MIPs	Cholesterol	blood	concentration range 2.9 mM - 6.7 mM LOD = 2.4 mM	[3]
Amperometry	platinum/reduced graphene oxide/poly(3-aminobenzoic acid) (Pt/rGO/P3ABA)	Cholesterol	serum	concentration range 0.25-6.00 mM and 0.25-4.00 mM, LOD =40.5 μM	[4]
Fluorescence	CQDs-3-aminophenylboronic acid (APBA)	Glucose	saliva	concentration range 0.165 to 8 Mm LOD= 165 μM	[5]
Electrochemical	NPG/SPE screen-printed electrode (SPE) with nano porous gold (NPG)	Cholesterol	serum	concentration range 50 μM to 6 mM LOD = 8.36 μM	[6]
Dual optical colorimetry and turn on fluorescence	Nanoparticle Hybrids (Bio@ AgNPs).	Cholesterol Glucoes	Serum urine	concentration range 10-400 glucoes 0.5-40 Cholesterol LOD (Glucose) = 41.90 μM LOD (Cholestero)= 5.50 μM	[7]

Colorimetry	Cellulose-based strips (CBS)	Glucoes	urine	concentration range 3.9–6.4 Mm LOD= 0.45 mM	[8]
Fluorescence	CD@AgNPs Hybrids	Cholesterol Glucose	Serum urine	concentration range 2-60 µM Cholestero LOD= 3.0 µM 4-250 µM Glucose LOD = 38 µM	Current study

References

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