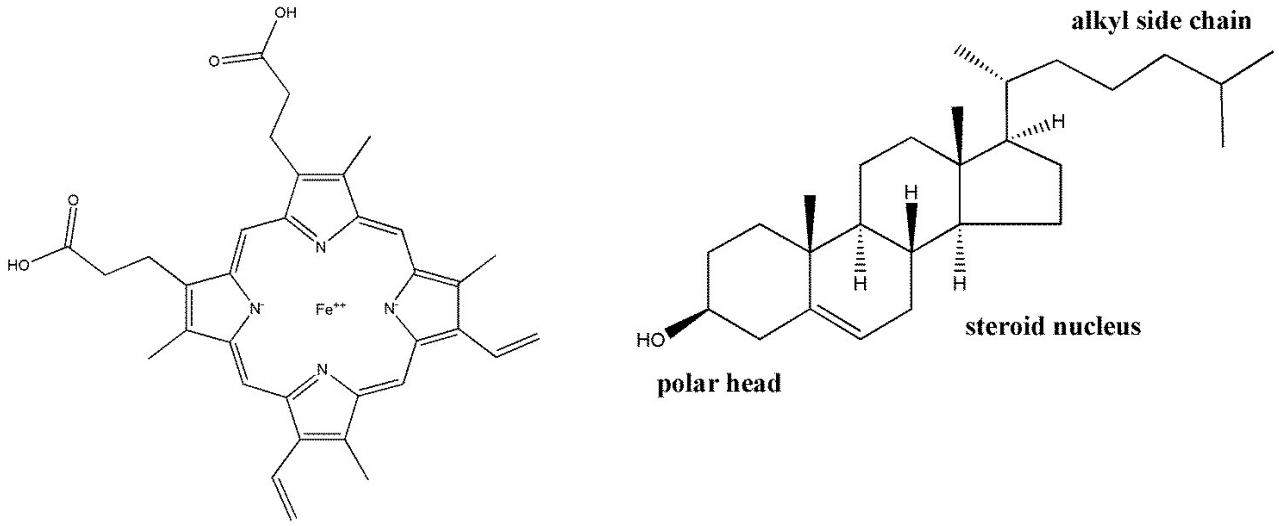
Supporting information
to
Carbon dot–hemoglobin complex-based biosensor for cholesterol detection

*Trang Thi Bui and Soo-Young Park**

School of Applied Chemical Engineering, Polymeric Nano Materials Laboratory, Kyungpook National University, Daegu 41566, Republic of Korea

*Corresponding author E-mail: psy@knu.ac.kr



(a) (b)

Figure SI 1. Molecular structures of (a) heme and (b) cholesterol.

Table SI 1. The linear range and LOD of different methods of cholesterol detection

Cholesterol sensor	Type of sensor	Linear range (mM)	LOD[a] (mM)	Sample type	References
ChOx/SPE with PB	Electrochemical	2–16	1.29	-	[1]
ChEt-ChOx/Ufm-Cu_2O-CS/ITO bioelectrode	Electrochemical	0.259 – 11.65 (10 – 450 mg/dl)	0.411 (15.97 mg/dl.cm^2)	Human serum	[2]
Alginate silica/PtOEP/ChOx	Fluorimetry	1.25–10	1.25	Hypercholesterolemia	[3]
CdSe/Zn quantum dots	Fluorimetry	0–9.1	0.01	-	[4]
CD/Hb	Fluorimetry	0–0.8	0.056	Human serum	This work

LOD[a] : limit of detection.
ChOx/SPE with PB: Cholesterol oxidase/ screen-printed electrode with Prussian blue
ChEt-ChOx/Ufm-Cu_2O-CS/ITO bioelectrode: Cholesterol esterase-cholesterol oxidase/ Ultrafine monodispersed cuprous oxide-chitosan/ indium tin-oxide.
Alginate silica/PtOEP/ChOx: Alginate silica/oxygen sensitive metallo-porphyrin/cholesterol oxidase biosensor.

References

1. Ramírez-Silva, et al., *Behavior of Two and Three Electrode Configuration and Different Mediators in Working Electrode on Development of Disposable Screen-Printing Biosensors for Determination of Free Cholesterol.* Journal of the Mexican Chemical Society, 2013. **57**(1): p. 47-53.
2. Singh, J., et al., *Bienzyme-Functionalized Monodispersed Biocompatible Cuprous Oxide/Chitosan Nanocomposite Platform for Biomedical Application.* The Journal of Physical Chemistry B, 2013. **117**(1): p. 141-152.
3. Prasad, J., et al., *Cholesterol biosensors based on oxygen sensing alginate-silica microspheres.* Biotechnology and Bioengineering, 2011. **108**(9): p. 2011-2021.
4. Kim, K.-E., T. Kim, and Y.-M. Sung, *Fluorescent cholesterol sensing using enzyme-modified CdSe/ZnS quantum dots.* Journal of Nanoparticle Research, 2012. **14**(10): p. 1-9.