

Facile Sonochemically-assisted Bioengineering of Titanium dioxide Nanoparticles and Deciphering their Potential in Treating Breast and Lung Cancers: Biological, Molecular, and Computational-based investigations

Nada K. Sedky^{1#}, Noha Khalil Mahdy^{2#}, Nour M. Abdel-kader^{1,3}, Manal M. M. Abdelhady⁴,
Mohamad Maged⁵, Aya L. Allam⁶, Mohammad Y. Alfaifi⁷, Samir N. Shamma⁸, Hatem A.F.M.
Hassan^{6,9}, Sherif Ashraf Fahmy^{10*}

¹Department of Biochemistry, School of Life and Medical Sciences, University of Hertfordshire Hosted by Global Academic Foundation, R5 New Garden City, New Administrative Capital, Cairo 11835, Egypt

²Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Cairo University, Kasr El-Aini Street, Cairo 11562, Egypt

³Department of Biochemistry, Faculty of Science, Ain Shams University, Cairo 11566, Egypt

⁴Clinical Pharmacy Department, Faculty of Pharmacy, Badr University, Cairo 11829, Egypt

⁵Faculty of Biotechnology, Nile University, Giza, Egypt

⁶School of Life and Medical Sciences, University of Hertfordshire Hosted by Global Academic Foundation, New Administrative Capital, Egypt

⁷King Khalid University, Faculty of Science, Biology Department, Abha 9004, Saudi Arabia

⁸Institute of Global Health and Human Ecology, School of Sciences & Engineering, The American University in Cairo, AUC Avenue, P.O. Box 74, New Cairo 11835, Egypt.

⁹Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Cairo University, 11562 Cairo, Egypt.

¹⁰Department of Chemistry, School of Life and Medical Sciences, University of Hertfordshire Hosted by Global Academic Foundation, R5 New Garden City, New Capital, Cairo 11835, Egypt

***Correspondence:** Sherif Ashraf Fahmy; **email:** sheriffahmy@aucegypt.edu;

Tel.: +20-1222613344

#These authors contributed equally to this work.

Table S1. Primers used in RT-qPCR.

Primer ID	Primer sequence (5' – 3')
β -actin F	CACCATTGGCAATGAGCGGTTC
β -actin R	AGGTCTTTGCGGATGTCCACGT
Bax F	TCAGGATGCGTCCACCAAGAAG
Bax R	TGTGTCCACGGCGGCAATCATC
BAK F	CGACATCAACCGACGCTATG
BAK R	CCACTCTCAAACAGGCTGGTG

Table S2. Antibodies used for Western blot analysis

Antibody	Species	Dilution used	Company
Caspase-3	Rabbit	1:1000	Cell Signaling
Caspase-7	Rabbit	1:1000	Cell Signaling
B-actin	Mouse	1:1000	Invitrogen
Anti-mouse IgG, HRP-linked	Horse	1:3000	Cell Signaling
Anti-rabbit IgG, HRP-linked	Goat	1:3000	Invitrogen

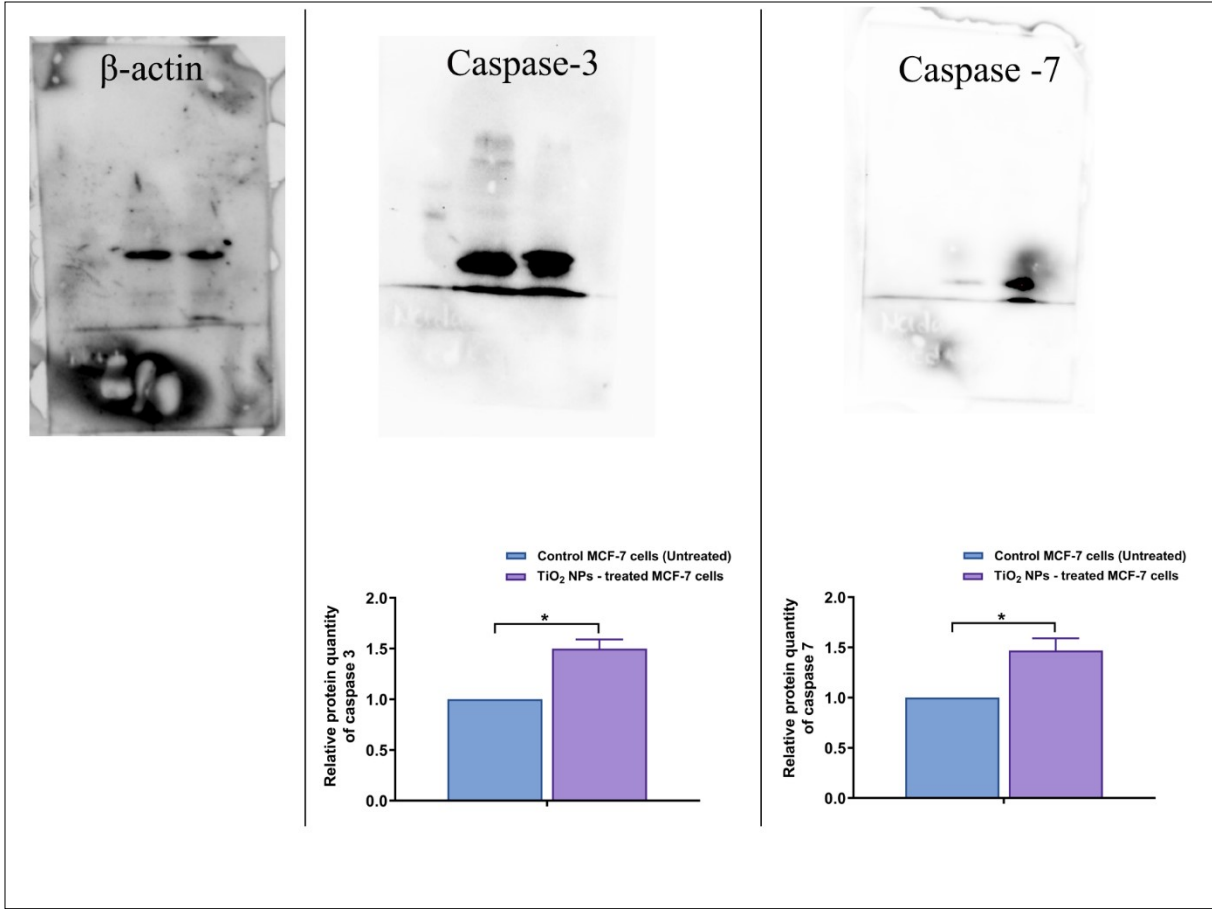


Figure S1: Chemiluminescence membranes for β -actin, caspases 3 and 7, and their corresponding bar graphs below.