

An In-House-Built and Light-Emitting-Diode-Based Photodynamic Therapy Device for Enhancing Verteporfin Cytotoxicity in a 2D Cell Culture Model

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Citation

Zanzarini, I.d.S., Barbosa, G., Prado, L.d.O., Zattoni, I.F., Da Paz, G., Prado, A.L.d., Volanski, W., Lavarda, M.D., Rego, F.G.d.M., Picheth, G., Moure, V.R., Valdameri, G. An In-House-Built and Light-Emitting-Diode-Based Photodynamic Therapy Device for Enhancing Verteporfin Cytotoxicity in a 2D Cell Culture Model. *J. Vis. Exp.* (191), e64391, doi:10.3791/64391 (2023).

Date Published

January 13, 2023

DOI

10.3791/64391

URL

jove.com/video/64391

Materials

Name	Company	Catalog Number	Comments
0.5% Trypsin-EDTA (10x)	Gibco	15400054	Mammalian cell culture dissociation reagent
3D printer	Flashforge		Finder model
96-well plates			Non-sterile, polystyrene, and high-binding surface plates with flat bottom wells used for 2D cell culture
Arduino			
Brightness sensor			TSL2561 model with 0.1-40.000+ lux detection levels and I2C interface
Buttons			
Buzzer			
Cell culture Flasks			Sterile, polystyrene, rectangular bottom flask with Tissue Culture (TC)-treated surface, canted neck and vent cap (sizes)
Centrifuge Tubes			Sterile, polypropylene tubes with 15/50 mL capacity used for cell culture dilution at seeding step of the assay
CO ₂ Incubator			
Controller board			ESP32
Design Software	Trimble		SketchUp
DMEM High Glucose	Gibco	11965092	DMEM (Dulbecco's Modified Eagle Medium) is a widely used basal medium for supporting the growth of many different mammalian cells.

DMSO	Sigma-Aldrich	D4540-500ML	Dimethyl sulfoxide, ≥99.5% (GC), suitable for plant cell culture
Fetal Bovine Serum	Gibco	12657029	FBS provides the best value by delivering consistency of cell growth over time and passages.
Gentamicin (50 mg/mL)	Gibco	15750060	Water-soluble antibiotic drug originally purified from the fungus <i>Micromonospora purpurea</i> . Gentamicin acts by preventing cell culture contamination
Hemocytometer			Neubauer patterned chamber used for cell counting at seeding step of the assay
Inverted Laboratory Microscope	Leica		DM IL LED
Laminar Flow Hood			Cabin designed to protect the working environment from contaminants by maintaining a constant, unidirectional flow of HEPA-filtered air over the work area. Used at several steps of cell cultivation and treatment procedures
LCD display			
LED RGB WS2812			5050 RGB SMD model with a built-in processor. Tape with 30 LEDs, 1 meter length and 9 watts
MDF fiberboards			3mm thickness medium-density fiberboards
Microcentrifuge Tubes			Sterile, polypropylene tubes with safety lid and 1.5/2.0 mL capacity. Convenient tools for manipulating small volumes at treatment step of the assay
Microplate reader	ThermoFischer		Multiskan FC Microplate Photometer designed to detect a broad wavelength range of absorbance (340-850 nm). The equipment was used to evaluate cell viability after MTT incubation.
MTT Reagent	Invitrogen	M6494	3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide. Used for cell viability assays
Operational System	Real Time Engineers Ltd.		FreeRTOS
P10 micropipette			Non-electronic, single-channel, 1-10 µL capacity
P1000 micropipette			Non-electronic, single-channel, 10-1000 µL capacity
P200 micropipette			Non-electronic, single-channel, 20-200 µL capacity
PDT Equipment	LumaCare		Model LC-122
Phosphate-Buffered Saline pH 7.4	Gibco	10010031	Balanced salt formulation used for washing cells during cultivation and assay procedures
Potentiometers			
Tips			Non-sterile, universal fit, 10/200/1000 µL maximum volumes
Verteporfin	Sigma-Aldrich	SML0534-5MG	Verteporfin, ≥94% (HPLC)