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DESENVOLVIMENTO DE NOVOS PROTOCOLOS DE TFD

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CEPOF
CENTRO DE PESQUISAS EM ÓPTICA E FOTÔNICA

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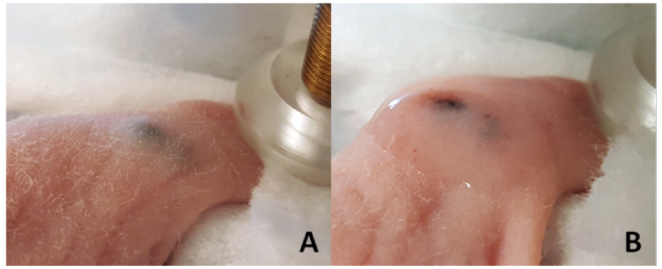
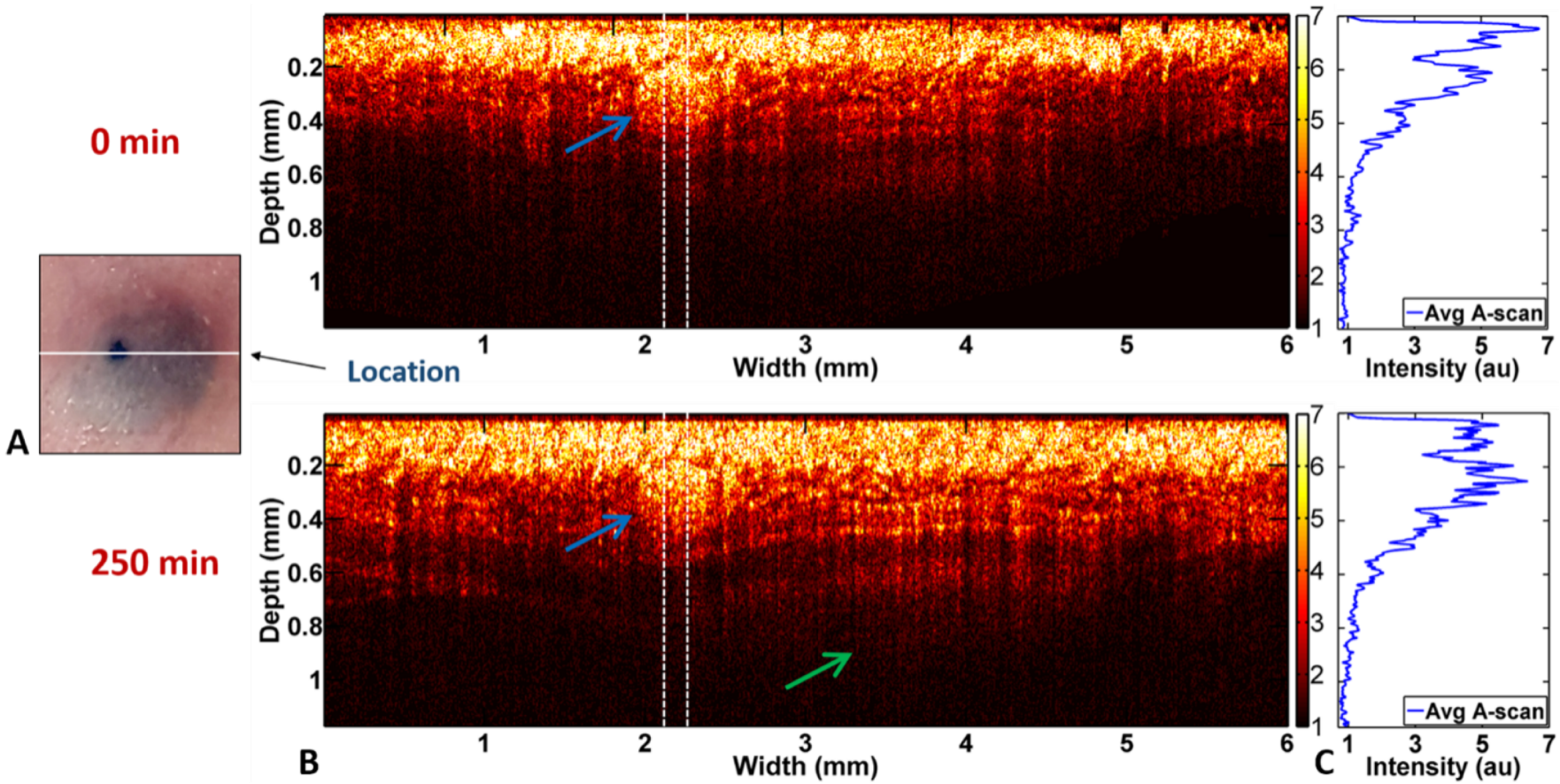
OCT protocol

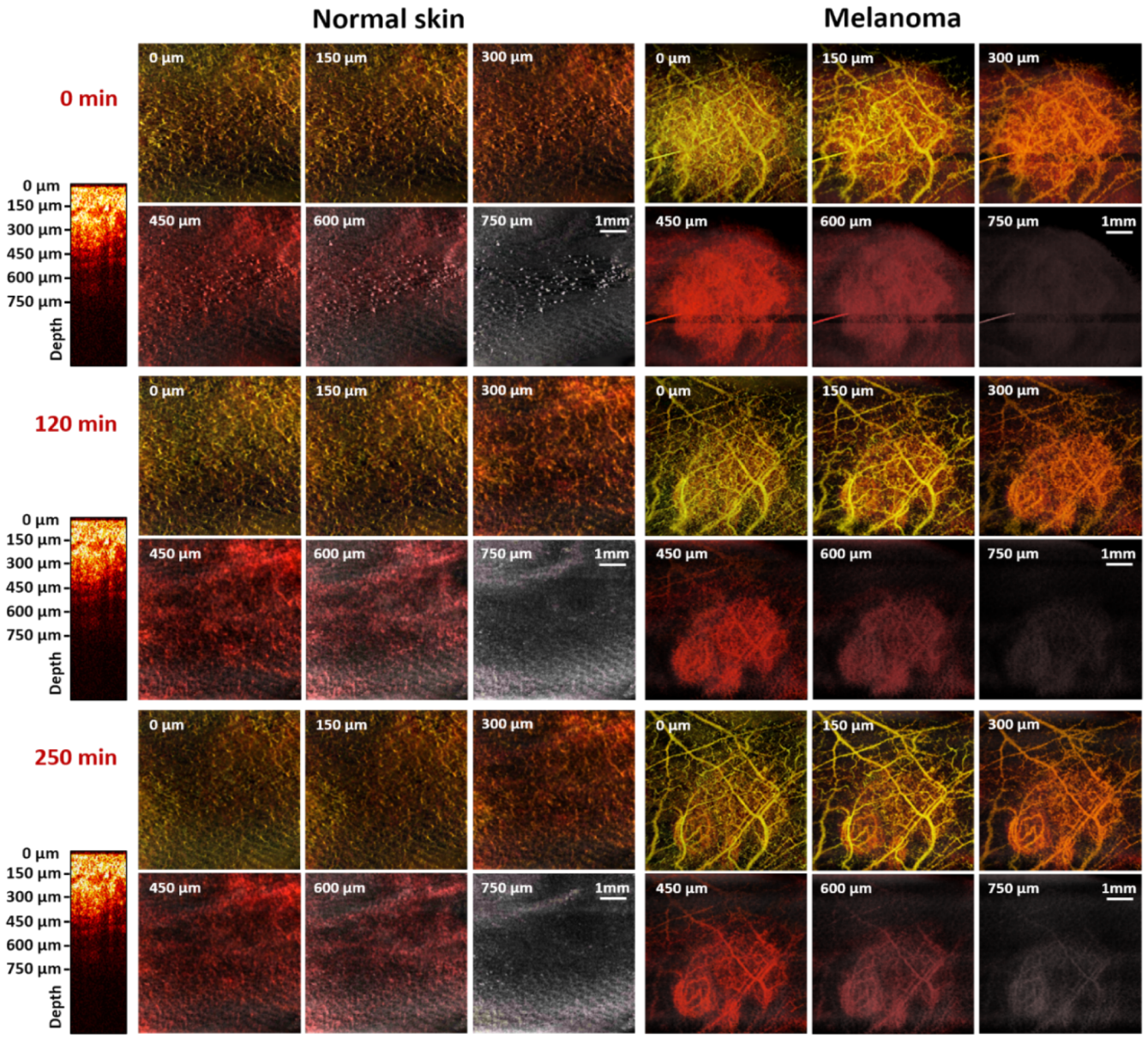
- **The animals' paw was immobilized to the stage to reduce breathing movements;**



- **OCA was topically applied immediately before the first image;**
- **Each image took approximately 5 min and were taken for 4 hours, every 30 min;**
- **B-scans were processed to achieve the microvasculature network imaging before and after OCA;**

OCT B-Scans


0 min
250 min
A
B
C
Location
Depth (mm)
Width (mm)
Intensity (au)
Avg A-scan



L. Pires et al. J Biomed Opt 2016

Photosensitizer kinetics

- Photodithazine administered intravenously (1.0 mg/kg)

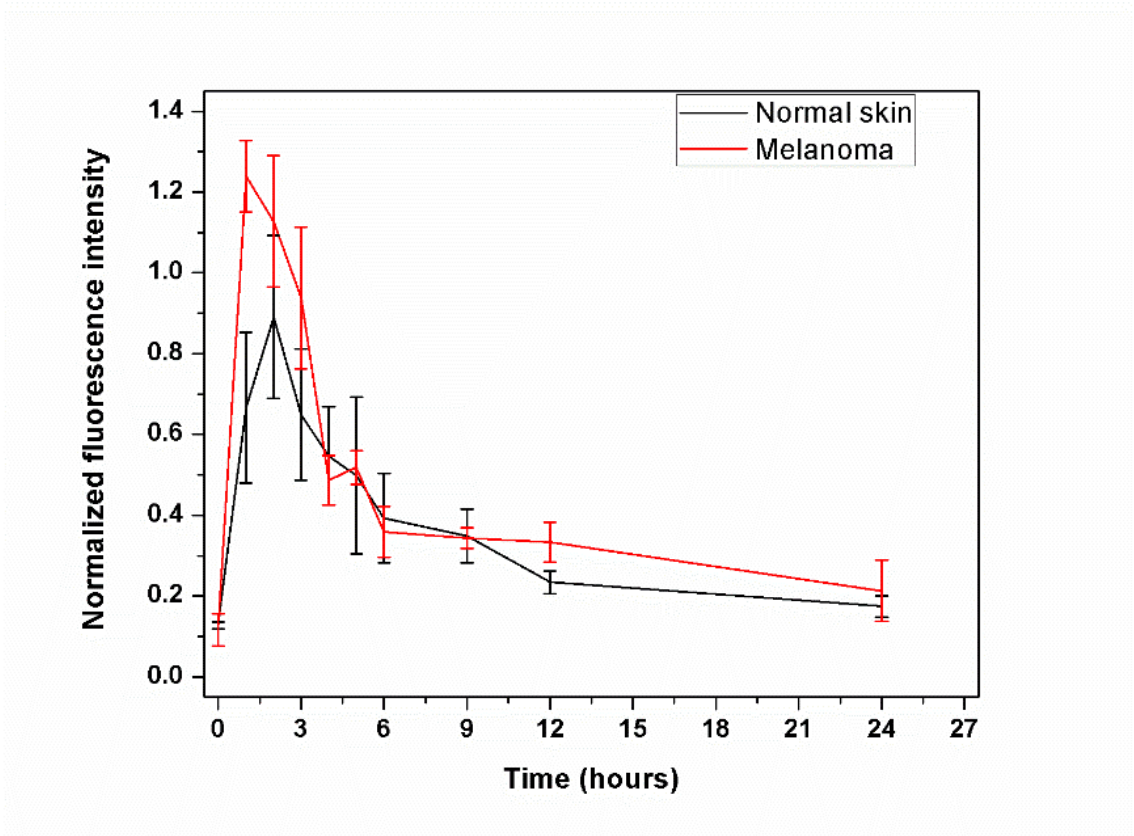
Laser-induced fluorescence spectroscopy (LIFS)

- Excitation at 408 nm;
- Fluorescence emission at 660 nm was normalized by the emission at 500 nm;

Photosensitizer chemical extraction

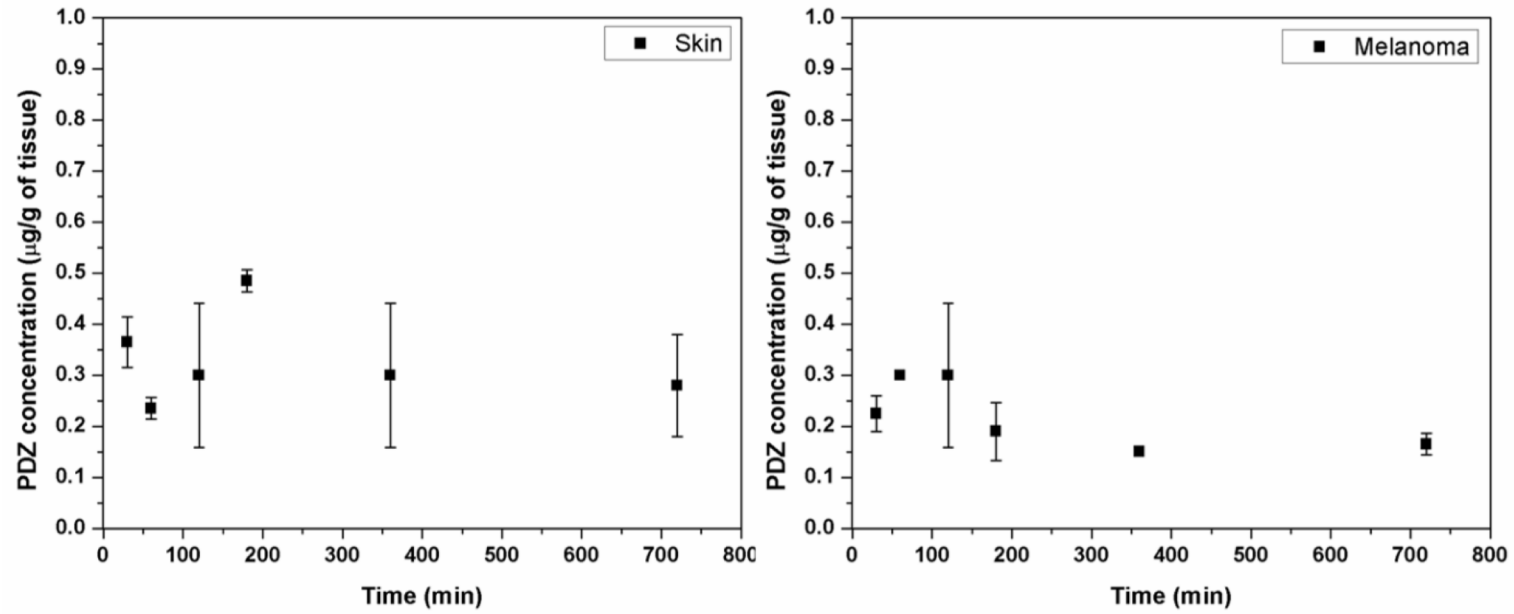
- Based on the LIFS results, six timepoints were determined;
- Two animals were sacrificed per timepoint, and tumor and normal skin were removed for PS quantification;
- PS concentration was determined by absorption spectroscopy.

Photosensitizer kinetics: Laser-induced fluorescence spectroscopy



High concentration in lesion between 1 and 3 hours after injection.

Photosensitizer kinetics: PS chemical extraction

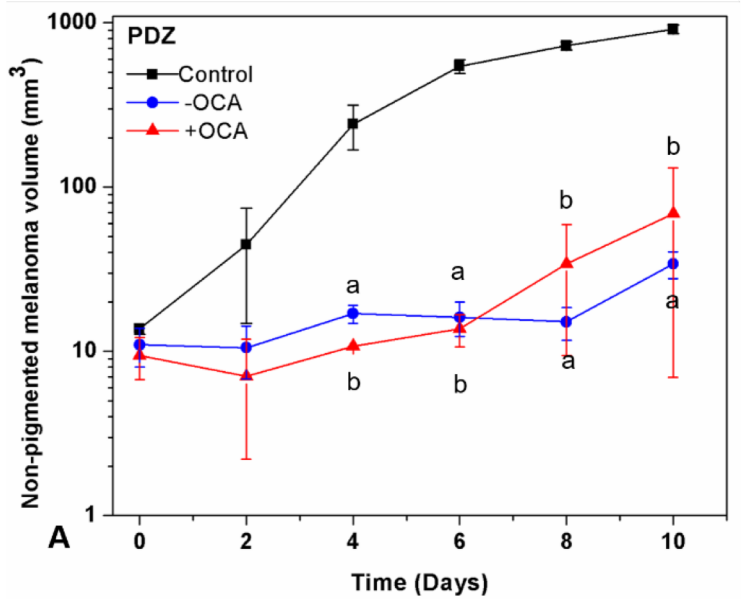


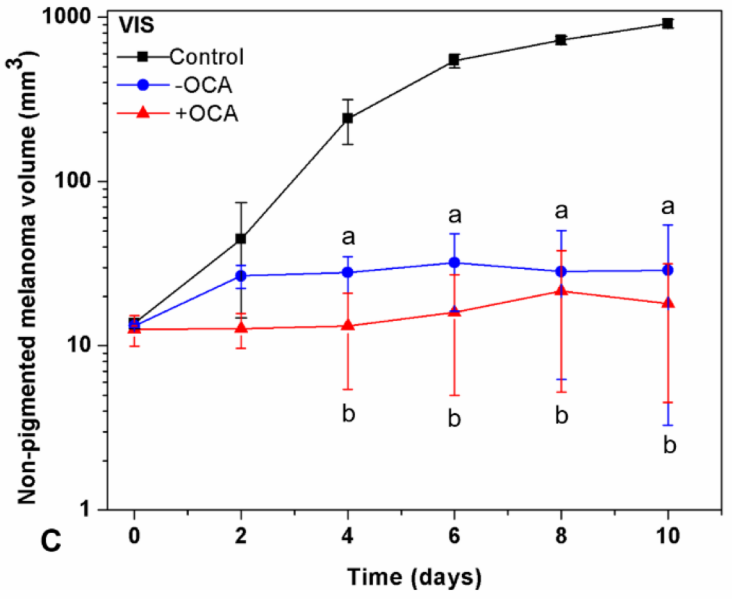
-No selectivity was observed;
-High concentration in lesion between 1 and 3 hours after injection.

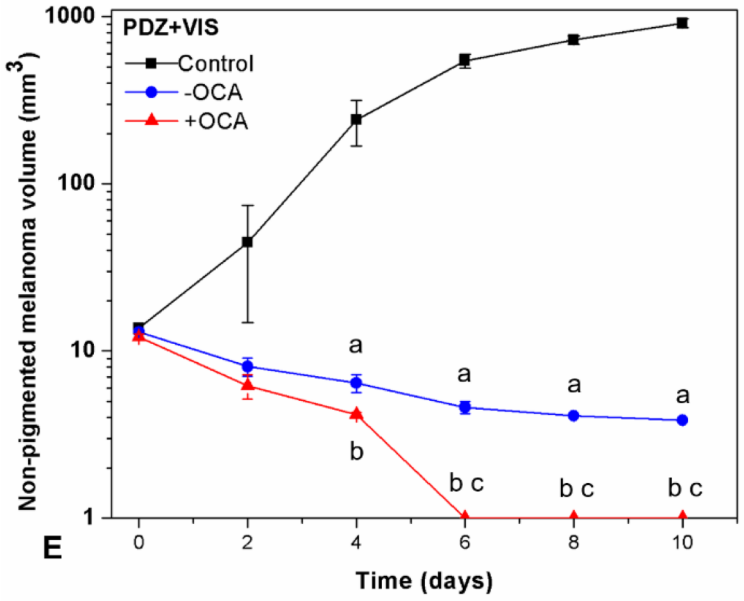
	OCA	Treatment group	Number of animals (n)
Non-pigmented and pigmented tumors	-	Control	3
	-	PDZ-PDT	3
	+	OCA + PDZ-PDT	3
	-	VIS-PDT	3
	+	OCA + VIS-PDT	3
	-	PDZ-PDT + VIS-PDT	5
	+	OCA + (PDZ-PDT + VIS-PDT)	5

Tumor assessment: tumor volume was measured by ultrasound and/or photoacoustic imaging. The specific growth rate (SGR) and doubling time (DT) was then calculated.

Histology: all the tumors were sectioned and stained with H&E and for S100 protein and used to quantify the S100 expression and tumor thickness.



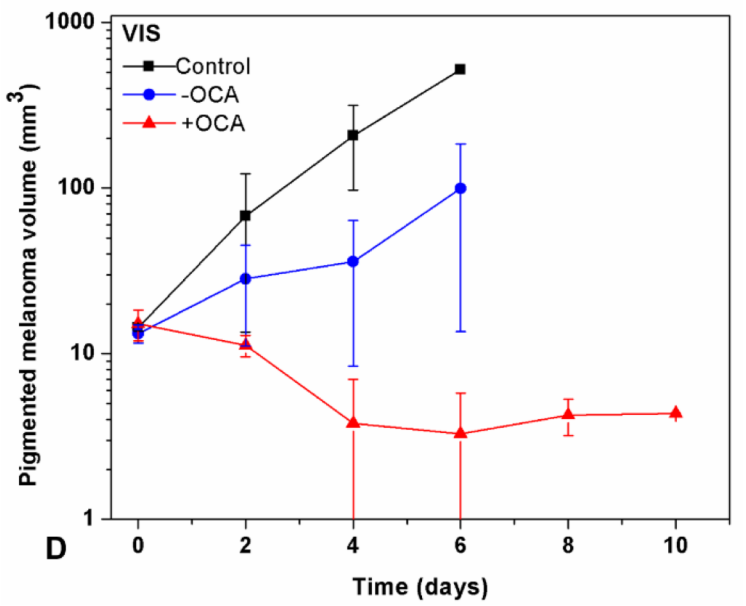


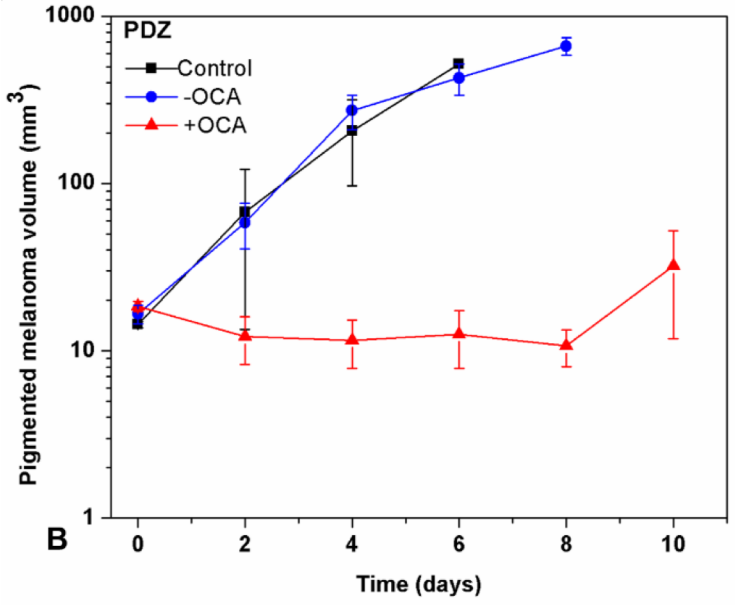


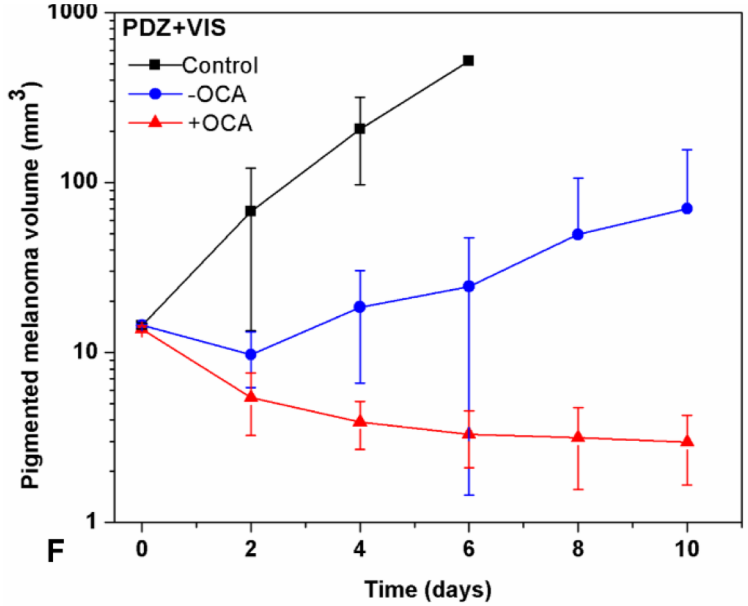
Non-pigmented melanoma

(1) VIS and PDZ showed similar response;

(2) OCA only improved the dual-agent PDT response.







Pigmented melanoma

(1) VIS more efficient than PDZ;

(2) OCA improved PDT response in all protocols investigated;

(3) Best result achieved with the dual-agent PDT combined to OCA.