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Resin phantoms as skin simulating layers

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<p>In order to apply light treatment to skin, the absorption through the outer layers of the skin needs to be considered. Human skin is a highly scattering medium and the melanin in the epidermal layer of the skin is a major absorber of light in the visible and near infrared wavelengths. Darker skin has a higher concentration of melanin in the epidermis and absorbs more light than fair skin. Ideally the effect of the skin treatment on the outer layers of the skin should be tested on in vitro multi layer skin models. This is not always feasible. For this work phantoms were used together with skin cancer cells to test the effect of outer layer absorption on the efficiency of Photo Dynamic Therapy treatment. Three solid phantoms were prepared from clear resin, TiO particles (scattering particles) and carbon black (absorption particles). Different carbon black concentrations were used to simulate different skin types. Cells were prepared and treated with the photosensitiser. The phantoms were placed inside the wells containing the photosensitised cells, just touching the media in the well. The attenuation of the different phantoms was calculated and the laser treatment times were adjusted to keep the light dose delivered to the cells at 4.5 J/cm2. After laser treatment cell viability was measured, using the Cell Titer Blue Viability Assay, for each of the wells. The phantoms attenuated the laser light by between 10 and 30

Level (Hons, MSc,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

No

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 Proceedings (Yes / No)?

Yes

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