
Contribution ID: **82** Type: **Oral Presentation**

# Global DNA methylation status of colorectal cancer cells exposed to photodynamic therapy

*Tuesday, 10 July 2012 11:40 (20 minutes)*

## Abstract content <br>   (Max 300 words)

Background: DNA methylation is defined as a chemical modification without changing the DNA sequence. DNA methylation is an important regulator of gene expression and has been associated with human cancers. Low intensity laser irradiation (LILI), or biostimulation, is used in conjunction with photosensitisers in photodynamic therapy (PDT) to treat cancers. This study aims to determine the effect of PDT on global DNA methylation. Methods: Colorectal cancer cells (CaCo-2) were irradiated with 5 J/cm2 at 680 nm. Zinc Sulphophtalocyanine (ZnPc) was used as photosensitiser (20 μM). The demethyliser, 5-Aza-2-deoxycytidine (Aza), was added to cells at a concentration of 0.1 or 3 μM. Cell morphology, viability and proliferation was determined and global methylation status was measured using gel electrophoresis. Results: Pictures that were taken of cells during the 72 hour incubation period have shown that the vacuoles that were present in some cells disappeared after 72 hours in the AZA 0.1 μM and Control cells. The vacuoles in the AZA 3 μM cell group appear to have increased after 72 hours. PDT had no effect on cell viability and proliferation on CaCo-2 cells. When 3 μM Aza was added to cells, there was an increase in viability (P<0.001), however this increase was no longer significant when used in combination with PDT. Conclusion: The combination of Aza and PDT did not affect the growth of CaCo-2 cells, however when compared to cells treated with Aza only there was a significant decrease. DNA methylation status of CaCo-2 cells has no effect on PDT using the parameters outlined above. More work on the effect of DNA demethylation and PDT is currently being conducted.

## Apply to be<br> consider for a student <br>   award (Yes / No)?

Yes

## Level for award<br> (Hons, MSc, <br>   PhD)?

MSc

## Main supervisor (name and email)<br>and his / her institution

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## Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

yes

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**Session Classification:** Photonics

**Track Classification:** Track C - Photonics