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## Effects of Laser Irradiation on Hematoporphyrin-treated Normal and Transformed Thyroid Cells in Culture<sup>1</sup>

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Laser irradiation of tissues treated *in vivo* with the hematoporphyrin derivative (HPD) is known to result in a cytotoxic effect, reportedly more pronounced in the tumor than in the surrounding normal tissues. In order to ascertain if this phenomenon had a clear cellular basis, it has been now reproduced *in vitro* in a model system consisting of normal and transformed cell lines. Epithelial rat thyroid cells were infected and transformed with a RNA oncogenic virus. Both the original (normal) and the viral-transformed (tumorigenic) cells were incubated with HPD and exposed to two types of laser irradiation: 631 nm, continuous wave; and 337.1 nm, pulsed. Under the conditions tested, the percentage survival of the transformed cells was found to be lower (up to ~3 times) than that of the normal cells. The cytotoxic effect was greater using the pulsed than using the continuous-wave irradiation. The difference between normal and tumor cells was more evident at 30  $\mu\text{g}$  than at 50  $\mu\text{g}$  of HPD per ml. The HPD not followed by laser irradiation had no effect on the cell growth rate.

The finding of a significant difference in the sensitivity to photoactivated HPD between normal and tumor cells under strictly controlled and highly comparable conditions opens new possibilities to the study of the cellular and molecular mechanisms involved in the phototherapy of tumors. Furthermore, studies *in vitro* on the active components of the photosensitizer and on their selectivity towards the tumor cells, explained at a cellular level, will lead to better approaches to photochemotherapy *in vivo*.

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