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Chemoradiation interactions under reduced oxygen conditions: Cellular characteristics of an *in vitro* model

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Abstract:

Hypoxic tumour regions often contain viable cells that are more resistant to chemotherapy and/or radiotherapy, making it of key importance to analyse new combination treatments under both normoxic and hypoxic conditions. In this study, the impact of moderate hypoxia and anoxia on cellular characteristics was investigated in isogenic A549 cells differing in p53 status. VEGF expression, doubling time, cell cycle distribution, induction of apoptosis and p53 protein expression were evaluated. Radiation survival curves yielded an oxygen enhancement ratio of 1.16 – 1.67. In conclusion, an in vitro hypoxia model that will be highly useful to analyse chemoradiation interactions is presented.

Key-words: Hypoxia; p53, Cell cycle; Apoptosis; Radioresistance