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***Ganoderma lucidum*-cytotoxic effects and cytokine gene induction as compared with the immunobladder® BCG in murine MB49 cells**John W M Yuen<sup>1</sup>, Cyrus K C Ho<sup>1</sup>, Tony S S To<sup>1</sup> and Chi-Fai Ng<sup>2</sup><sup>1</sup>The Hong Kong Polytechnic University, Hong Kong<sup>2</sup>The Chinese University of Hong Kong, Hong Kong

Immunotherapeutic effects of the ethanol extract of *Ganoderma lucidum* (GLE) were compared against the conventional Immunobladder® Bacillus Calmette-Guérin (BCG) in terms of cytotoxicity, cell cycle analysis and cytokine genes expression, *in vitro*. In conjunction with the intravesical study using the orthotopic MB49/C57 mice model, the murine urothelial carcinoma MB49 cell line was used for experiments. In agreement with the previous findings, GLE was demonstrated to exhibit G2/M phase cell arrest. On the other hand, dose-dependent cytotoxicity was demonstrated by both GLE and BCG as measured by the lactate dehydrogenase (LDH) assay; however, GLE concentrations ranged from 40 to 100 µg/ml killed 24.7-88.1% of the MB49 cells, which was superior to the 250-1000 µg/ml of BCG that killed 7.6-19.6%. Such cytotoxic effects were also shown to be inter-correlated with the expression of several cytokine genes, which are known to be important for anticancer. Although both GLE and BCG were shown to be active in inducing the interleukin(IL)-6, IL-12b and interferon-gamma (IFN-γ), dose-dependent inductions were only demonstrated by the range of GLE concentrations being tested. Particularly, the induction of IFN-γ gene was denominated by GLE up to 4-folded, as compared with the 1.5-folded increase by BCG. Basic research on immunobladder® BCG is limited and given that IFN-γ is well-evidenced for its anticancer effects, results herein speculated GLE could be an immunotherapeutic agent superior to the BCG by exerting stronger cytotoxic effects via a pathway involving IFN-γ and other molecules. The *in vivo* effects of GLE are currently being examined in animals.

**Biography**

John W M Yuen is currently an Associate Professor from the School of Nursing of the Hong Kong Polytechnic University. He is a biomedical scientist who has completed his PhD in 2007, with a focus on cancer and immunology in the field of Urology. His research team conducts different types of research by adopting a wide range of methodologies from exploratory cross-sectional/cohort design and *in vitro* laboratory experiments to *in vivo* trails on animals and humans.

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