**The role of nitric oxide in human Uveal Melanoma**

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**Background and aims.** Nitric oxide (NO) is a gaseous signalling molecule that plays a complex and context-dependent dual role in tumour biology. Human Uveal Melanoma (UM) is the primary eye cancer with a poor prognosis. Up to 50% of UM patients developed metastasis, whose life span is <18 months. The signalling driving UM tumour growth and metastasis is largely unknown. This study aims to investigate the role of NO played in the growth and metastasis of UM cells.

**Methods.** In this study, we incubated two typical UM cell lines (i.e. 92.1 and OMM2.5 cell lines that are derived from primary and metastatic tumours, respectively) with several NO donors and inducible NO synthase (iNOS) modulators. Following compound exposure, we evaluated cell viability through MTT assays at various time points to assess cytotoxic effects. Additionally, scratch assay was conducted to quantify cell migration and further investigate the influence on metastatic potential.

**Results.** The results showed that some of the NO donor and iNOS modulators exhibited potent effect in decreasing UM cell viability due to either a pronounced cytotoxicity and/or a significant effect in inducing oxidative stress in both cell lines. Some of the NO-related compounds are also effective in reducing UM cell migration, which effect is associated with a decreased expression of tumour metastatic marker.

**Conclusion/Discussion.** Overall, the results suggest that selective NO-related compounds exert diverse and selective effect on UM cells, which may have potential therapeutic applications in the treatment of UM.

**References:**

1. Johansson, C. C et al. (2010) Expression and prognostic significance of iNOS in uveal melanoma. International journal of cancer, 126(11), 2682–2689.
2. Andrabi, S. M. et al. (2023) Nitric Oxide: Physiological Functions, Delivery, and Biomedical Applications. Advanced science (Weinheim, Baden-Wurttemberg, Germany), 10(30), e2303259.