

Conference Presentation

## Antitumoral activity of homeopathic and anthroposophic *Viscum album*'s preparations: an in vitro assay

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### Abstract

**Background:** *Viscum album* (mistletoe) has been used for a variety of purposes and is widely used as an alternative treatment for cancer and other diseases. Preparations of fermented extracts from *Viscum album* (VA), a plant from the Loranthaceae family, have been used, mainly in European countries, with promising results as adjuvant therapies, especially in Anthroposophic Medicine.<sup>1,2,3</sup> *In vitro* studies have demonstrated that various types of VA may have cytotoxic activity in carcinoma cells, being able to activate the apoptotic cascade or leading cells to necrosis. It is possible to prepare VA extracts using different procedures and solvents. The homeopathic preparations involve the use of ethanol as solvent<sup>4</sup>, while the anthroposophic preparations are obtained in aqueous solvent<sup>5</sup>.

**Aims:** The present study aimed to verify the cytotoxic effects of homeopathic and anthroposophic *Viscum album* preparations in human leukaemic K562 cell line.

**Methodology:** The cytotoxic effects of anthroposophic (ISCADOR A - IA; ISCADOR P - IP; ISCADOR M - IM; ISCADOR U - IU; ISCADOR Qu - IQu) and homeopathic *Viscum album* extracts (VA) were evaluated in K562 cells. For this, ten independent experiments of Trypan blue assay and five independent MTT assay were carried out.<sup>6</sup> Additionally, cell morphology was analysed by phase inverted contrast microscopy coupled to digital camera (Optika XDS-3).<sup>7</sup> The results were expressed as mean±SD, and statistical comparisons were performed by one-way ANOVA.

**Results:** All samples tested were able to interfere with viability and mitochondrial activity, with important morphological damage, when compared to respective controls. Considering the ISCADOR samples all of them presented similar cytotoxic activity, with lower activity attribute to IP (around 25% of viable cells) in comparison to 90% of non-viable cells induced by other samples. The homeopathic preparation originated the best results compared to anthroposophic samples. Morphological analyses supported the MTT and trypan blue assays' results.



**Cite as:** Batista JVC, Melo MNO, Oliveira AP, Viriato EP, Baumgartner S, Holandino C. Antitumoral activity of homeopathic and anthroposophic *Viscum album*'s preparations: an in vitro assay. Proceedings of the XXIX GIRI Meeting; 2015 June 3 – 5; Verona (Italy). *Int J High Dilution Res.* 2015; 14(2): 53-54

**Conclusion:** The anticancer activity tested in K562 indicate that all *Viscum album* samples have anticancer activity, in a dose dependent manner. Further tests need to be done in order to contribute for the understanding of the *Viscum album* antitumoral mechanisms, as well as about differences between homeopathic and antroposophic procedures.

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**Supporting Agencies:** FAPERJ

**Keywords:** *Viscum album*, cancer, homeopathy, anthroposophic medicine

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