Original Article

Metastatic melanoma cells are selective affected *in vitro* by *Atropa belladonna* 200 c.

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Abstract

Background: Cancers are among the top 10 causes of death worldwide. Melanoma is a skin cancer originated from mutations on melanocytes. Transformed melanocytes can migrate and invade tissues in a process called metastasis. When early diagnosed, melanoma is curable by surgical excision. However, when metastatic, cells are refractory to existing therapies and patient survival rates are low. New therapeutic interventions with effective results on melanoma cells that could increase long term patients' survival rates are needed. Over the past decade our group has been using cell-based models to determine highly diluted solutions effects. Several compounds have been tested on normal and tumor cells with promising results that could indicate the efficacy of homeopathy on selected cases.

Aims: To investigate *Atropa belladonna* 200 c (Bell200c) *in vitro* antitumor effects on B16-F10 metastatic murine melanoma cells and its toxicity on Balb/3T3 normal murine fibroblasts.

Methodology: *Atropa belladonna* 200c was produced and kindly donated by "Homeoterápica" compounding pharmacy (Curitiba, Brazil). Cells were treated for up to 72 hours. Assays to determine cytotoxicity, as well as functional and molecular cell patterns were carried out following standard protocols. Water treated cells were used as control group. All data were submitted to Shapiro-Wilk normality test followed by either Mann-Whitney or t-test. P value < 0.05 was considered significant.

Results and discussion: Cancer cells accelerated proliferation rates are often target for chemotherapeutic agents. Bell200c modulated cell cycle, leading to a decreased melanoma cell proliferation (44% less cells than control), and an increase in apoptotic cells number. If unspecific, those effects can lead to undesirable toxicity. Amazingly, no effects on fibroblast proliferation and death were observed. Melanoma cells malignancy was also affected, as the following tumor progression related features were modulated. Melanin production was higher in treated cells. N-cadherin and CD44 expression were statistically decreased. Clonogenic capacity was decreased by 35%. Here we have demonstrated Bell200c selective effects on melanoma cells with remarkable capacity of impairing metastatic melanoma characteristics.

Conclusion: *Atropa belladonna* has a prospective use in metastatic melanoma patients as a potential tumor progression regulator.

Keywords: *in vitro* testing, high dilution, B16-F10, melanoma.

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