ISBN 978-93-84468-71-2
Proceedings of 2016 International Conference on Cellular & Molecular Biology and Medical Sciences (CMBMS-16)
Paris (France), Sept. 21-22, 2016

The Effects of Ketone Extract of Viscum album on L929 Cells in Cell Culture

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***Abstract*:** *Viscum album is a species of mistletoe which grows on deciduous trees in Asian and European countries. The reports indicate that Vicum affects on cancer cells. This study was exerted to determine the the effects of ketone extract of Viscum album on L929 cells in cell culture. L929 cells were divvied into control and groups receiving 1, 0.1, 0.01 and 0.001 mg/ml of ketone extract of mistletoe. The data were analyzed using ANOVA. Our results showed that 1mg/ml of ketone extract of Viscum album results in increased viability of L929 cells ($P<0.001$), however, there were no significant difference between control group and other groups.*

Keywords: *Viscum album, Ketone extract, L929, Cell culture*

1. Introduction

Viscum album is a species of mistletoe in the family Santalaceae. Mistletoe (Viscum album) is a semiparasitic plant which grows on deciduous trees in Asian and European countries[1]. Viscum album L extracts (VAE, mistletoe) and isolated mistletoe lectins (ML) have immunostimulating properties and a strong dose-dependent cytotoxic activity[2]. They are frequently used in complementary cancer treatment patients, who received seven subcutaneous doses of Viscum Album and improvement in several laboratory parameters, confirming that VA can improve the immune response and restore suppressed cellular and humoral immunity to some extent[3]

Studies have shown that Viscum extract has an antiobesity effect and protect against hepatic steatosis in mic which high- fat diet-induced obesity[4]. The inhibitory effects of viscum extract on pancreatic cancer also has been investigated and the results showed an association between viscum extract consumption and elevated survival rates in patient[5] . Increases the quality of life of patients suffering from early stage breast cancer during chemotherapy[6]. VIscum album extract protects Hela cells against nuclear and mitochondrial DNA damage[7]. Fibrosarcoma malignant neoplasm composed of collagen-producing fibroblasts that is rare sarcoma of soft tissue. This cancer growth is very slow and like a lump under the skin or skin without pain and symptom described[8]. The aim of this study was to determine the effects of ketone extract of Viscum album on L929 cells in cell culture.

2. Material And Method

2.1. Extract preparation

[5]-[7]Viscum extract was prepared according to previous studies and different concentrations of extract (10mgr/ml, 1mg/ml, 0.1mg/ml, 0.001mg/ml) were used in our study.

2.2. Protocol of Study

We used MTT assay in this work to determine the effects of viscum extract on fibrosarcoma cells viability in cell culture. Briefly, the procedure was carried out in the following steps: DAY ONE: 100 µl of cells (15000 cells) was added into each well (96 well plate) and incubate at 37 with 5% co2 overnight. DAY TWO: The media was removed and extract was added and incubated at 37 with 5%co2 overnight. For control 10%FBS was added to media.

DAY THREE: extract was removed from media. 20 µl of 5 mg/ml MTT was added to each well and incubated for 4 hours at 37oC. 150 µ isopropanol was added and covered with tinfoil and agitate cells on orbital shaker for 15 min. Absorbance was read at 570 nm with a reference filter of 630 nm and recorded.

2.3. Statistical Analysis

Statistical significance was evaluated by one-way analysis of variance (ANOVA) using SPSS 19. Significance was measured using Fisher's least significant for the exact P values and significant differences are noted in the results. Differences with $P<0.05$ were considered significant.

3. Results

Figures I and II represent viability of L929 cells in cell culture and in control and groups receiving 1,0.1,0.01 and 0.001 mg/ml of ketone extract of mistletoe.

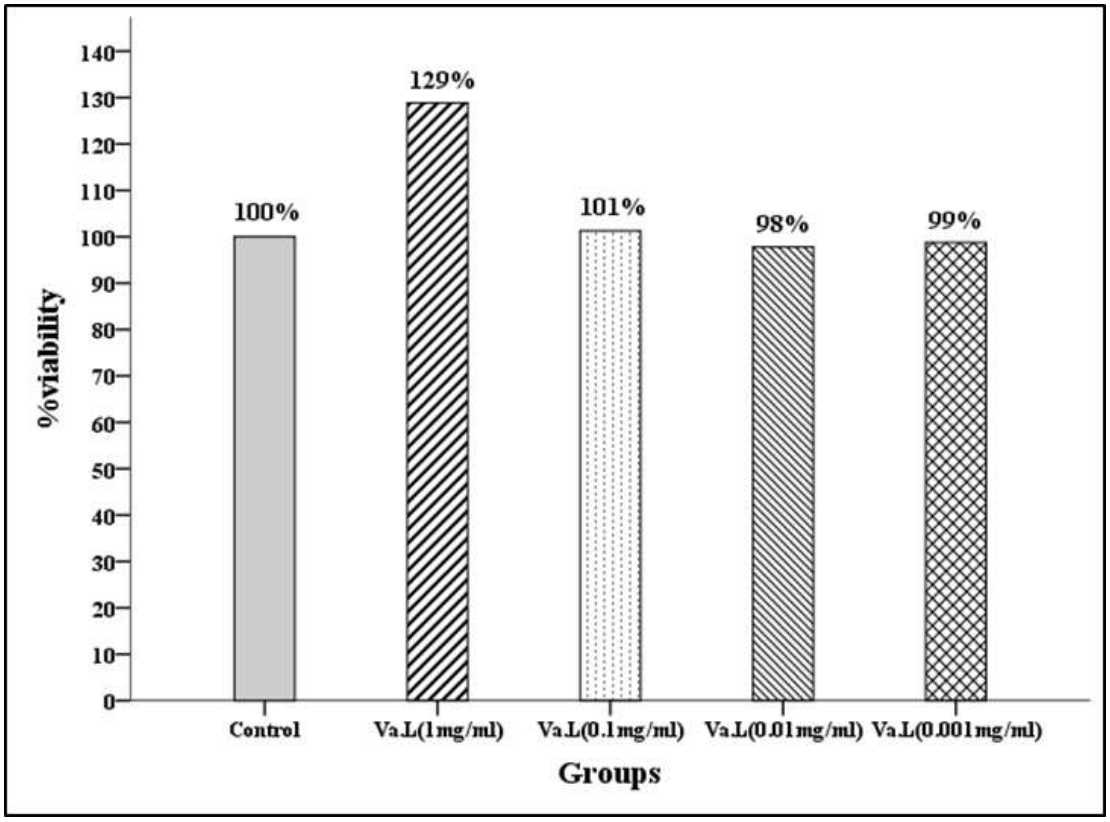

Fig I. Viability of L929 cells in cell culture and in control and groups receiving 1,0.1,0.01 and 0.001 mg/ml of mistletoe.

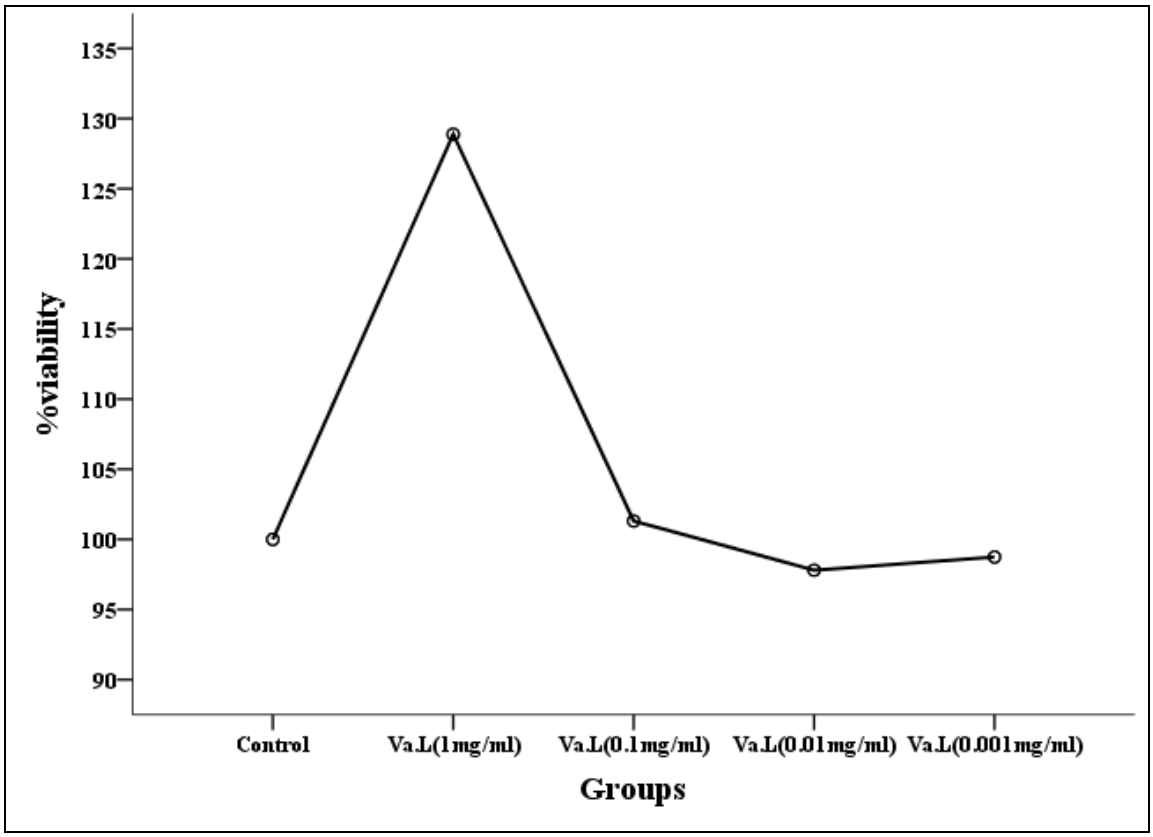

Fig II. Viability of L929 cells in cell culture and in control and groups receiving 1,0.1,0.01 and 0.001 mg/ml of mistletoe.

Our results showed that 1mg/ml of ketone extract of Viscum album results in increased viability of L929 cells (P<0.001), however, there were no significant difference between control group and other groups.

4. Discussion

In our study , we evaluated the anti tumor effects dependent of viscum extract on cell viability of l929 cell. Result show that extract of viscum has The potential effects of toxicity on l929 cell A high concentration of 10 mg up to 100 on l929 cell . in the other words toxicity effects of this mistletoe To a concentration of 100 micrograms per ml was observed. However At lower concentrations, toxicity effects was not observed. Indeed toxicity effects of viscum extract is in a dose dependent and By increasing the dose The increased toxic effects.

mistletoe has also been used in the treatment of chronic hepatic disorders in China and Korea. There are numerous reports showing that VA possesses anti-cancer effects [9]. There are several reports indicating that biologically active V. album compounds, and thus cytotoxicity or apoptosis-inducing properties, are dependent on the manufacturing process, host trees, different geographical regions and time of harvest[10] Viscum also has proved a significant anticancer effect in both experimental studies and clinical trials[11] Some recent evidence suggests that cytotoxic activity of mistletoe may be mediated through different mechanisms. These findings provide a good base for clinical trials[12]

5. Conclusion

Our results showed that 1mg/ml of ketone extract of Viscum album results in increased viability of L929 cells (P<0.001), however, there were no significant difference between control group and other groups.

6. Acknowledgements

We appreciate all who helped us to exert the present study.

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