

DETERMINATION OF CYTOTOXICITY EFFECT OF MISTLETOE EXTRACTS OBTAINED BY SUBCRITICAL WATER

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1. INTRODUCTION

- ❖ Mistletoe originating from Europe (*Viscum album* L.) has attracted special attention in traditional healing and medicine over the past centuries.
- ❖ Aqueous extracts from mistletoe are widely used in complementary cancer treatment as immunomodulation agents.
- ❖ Mistletoe extracts are complex multicomponent mixtures, which contain various biologically active substances such as glycoproteins, polypeptides, peptides, amino acids, oligo- and polysaccharides.

The aim of this study was to evaluate the cytotoxic effects of subcritical water extract of mistletoe leaves and to compare the results with extracts prepared on lower temperatures.

2. MATERIAL AND METHODS

- ❖ Extraction of plant material was performed at temperatures of 40, 70 and 120 °C and a pressure of 40 bar with water as solvent.
- ❖ The content of phenolic components in the obtained extracts was determined by HPLC method.
- ❖ The cytotoxicity of plant extracts was examined on cell lines: HepG2 and MCF7.



Extraction device

3. RESULTS AND DISCUSSION

- ❖ For this investigation plant material from the territory of Jagodina (Republic of Serbia) was used, which is characterized by a high content of phenolic components (Table 1).

Table 1 Content of phenolic components in Mistletoe water extracts

Phenolic compounds	Temperatura (°C)		
	40	70	120
Galic acid	0.23±0.01	0.21±0.00	0.34±0.00
Propionic acid	0.46±0.01	0.64±0.01	3.34±0.00
Catechin	0.11±0.02	0.13±0.25	3.04±0.22
Ferulic acid	0.56±0.00	0.31±0.00	0.52±0.01
Rosemary acid	0.32±0.02	0.22±0.00	2.14±0.02
Quercetin	0.28±0.03	0.22±0.01	2.06±0.01
Luteolin	20.21±0.4	12.08±0.04	6.60±0.07

- ❖ It can be noticed that a high content of phenolic components was measured in all tested extracts.

- ❖ The mistletoe water extract prepared at 40°C recorded the highest content of luteolin compared to the extracts prepared at temperatures of 70 and 120°C.

- ❖ The extract obtained at 120°C is significantly richer in quercetin, catechin, propionic and rosemary acids.

- ❖ Cytotoxic effect of mistletoe extract on cancer cell lines are present on Fig.1.

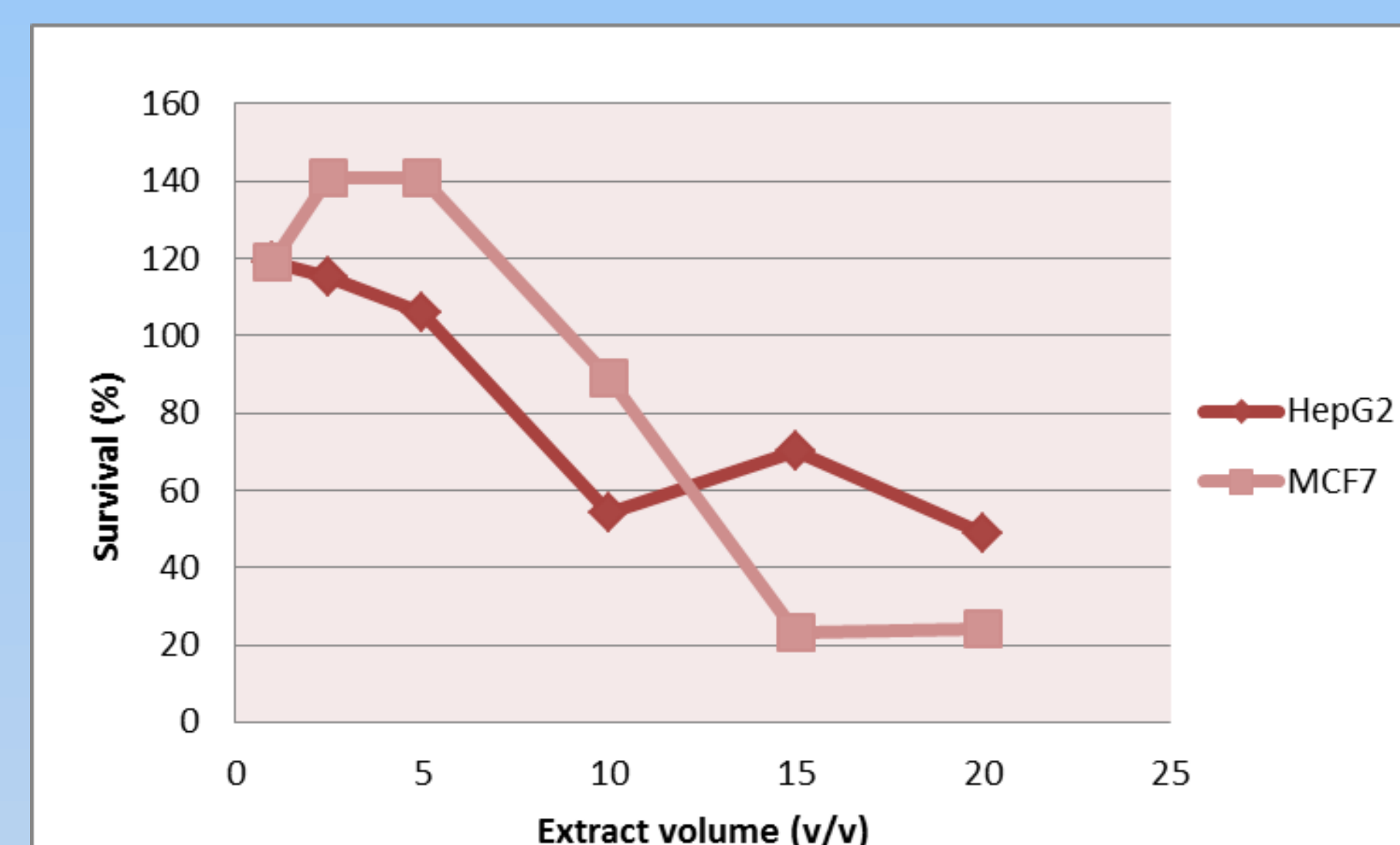


Fig. 1. Cytotoxic effect of mistletoe subcritical water extract after 72 h.

- ❖ The obtained results indicate that subcritical water extract obtained at temperature of 120 °C have high cytotoxic effect on both investigated cancer cell lines.
- ❖ The IC₅₀ values for this samples are 9,380 and 4,670 v/v

4. CONCLUSION

- ❖ Aqueous extracts of mistletoe contain a high content of polyphenols, as very important bioactive components.
- ❖ According to the obtained results, subcritical water extracts of mistletoe possess a high biopotential to be used in the pharmaceutical and food industries.

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