

Accordingly, high number of these cells provided significant survival advantage ($p = 0.0391$ and $p = 0.0136$ for intra- and peritumoral infiltration, respectively). Furthermore, combination of peritumoral B-cell density with the number of activated T lymphocytes identified patient subgroups with different disease outcome, which was most favorable in the case of high density, while very poor in the case of low density of both cell types. Multivariate survival analysis involving B-cell and activated T-cell densities alone and in combinations, as well as traditional prognostic factors, identified tumour thickness and CD20⁺/OX40⁺ cell density combination as significant independent prognostic factors.

Conclusions: Our results show correlation between low numbers of CD20⁺ B lymphocytes and melanoma progression. Moreover, the density of these cells, especially in association with that of activated T lymphocytes, proved of prognostic significance, indicating a possible role of tumour-infiltrating B cells in antitumour immune response reflected in better outcome of the disease.

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POSTER

Cancer Chemopreventive Potential, Polyphenolic Contents and Antioxidant Activity of Prosopis Cineraria

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Background: Prosopis cineraria (L) Druce, commonly called as Khejri, widely distributed and used in Rajasthan, India, as folk medicine and food.

Materials and Methods: Polyphenolic contents and free radical scavenging activity, in the stem bark, leaf, pod and flower of Prosopis cineraria, were measured. Cancer chemopreventive potential of Prosopis cineraria leaf extract was evaluated using two stage skin carcinogenesis model system. Male Swiss albino mice were divided into five groups; control, pre, peri, post and throughout treatment group.

Results: Total phenolic, flavonoid and flavanol contents were found significantly higher in leaf followed by flower, pod and stem bark. The leaf extract showed significant free radical scavenging activity followed by flower, pod and stem bark as evidenced by low IC₅₀ for DPPH and high percentage inhibition of DPPH and ABTS. Correlation between polyphenolic contents and antioxidant activity suggest that polyphenolic constituents may be responsible for observed antioxidant activity. A significant reduction was observed in tumour incidence, tumour yield, tumour burden, weight and size of tumour in all treatment groups as compared to control. Average latent period was also increased significantly in all treatment groups. In biochemical estimation of mice skin, a significant increase was observed in GSH, SOD and CAT. Whereas significant decrease in LPO level was observed in all Prosopis cineraria treated groups as compared to control.

Conclusion: The results from the present study suggest significant polyphenolic contents, antioxidant activity and chemopreventive potential of Prosopis cineraria extract.

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POSTER

Surface Enhanced Raman Spectroscopy Used for the Identification and Characterization of Melanoma Mice Skin Tissues

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Raman spectroscopy has currently become a powerful vibrational technique largely used to probe the molecular composition of biological tissues [1]. Raman spectra provide information on molecular vibrations leading thus to the possibility of highly specific fingerprinting of the molecular structure and biochemical composition of cells and tissues. In the past two decades there has been a renewed interest in Raman techniques due to the discovery of surface-enhanced Raman scattering (SERS) effect. Briefly, the usually weak Raman signals can be greatly enhanced when Raman scattering takes place on molecules at the surface or in very close vicinity to gold or silver nanoparticles. The SERS effect is mainly employed for the investigation of the molecular species adsorbed on noble metal nanoparticles. Recently, SERS was applied in the study of biological cells and tissue and proved great potential for a wide variety of applications in areas where nucleic acid identification is involved and could lead to the development of detection methods that minimize the time, expense, and variability of preparing samples. [2].

This work is intended to provide the latest investigations of our group in the field of spectroscopy applied in study of biological systems. Mice specimens employed in this study were inoculated with B16 melanoma cells and autopsy samples were collected at different stages of malignancy. The samples immersed in formalin solution mixed with silver colloidal nanoparticles were submitted to spectroscopic investigations

which revealed that the Ag nanoparticles penetrated the tissues and enhanced the signals especially from nucleic acids [3]. These observations proved the fact that Raman and SERS are capable to investigate biological systems and to diagnose the samples at an early stage of cancer.

Inclusion complexes of pentacyclic triterpenes found in the outer bark of the birch tree, such as betulin and betulonic acid were used to create pharmaceutical formulations which were tested on the diseased mice, since betulin proved to have benefic effects in skin treatments and closed inhibitory activity on proliferation of tumour cells [4, 5]. First results demonstrating the activity of these inclusion complexes formulations will be presented.

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POSTER

Radiosensitized Secondary Brain Melanoma Treatment

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Background: A high level of porphyrins has been found in the melanoma tissue therefore sensitized melanomas treatment is promising. Melanoma is the third most common cancer causing brain metastases. The aim of this work was to investigate the possibilities of sensitized secondary brain melanoma treatment using derivatives of hematoporphyrin as a radiosensitizer.

Material and Methods: From 2000 to 2010 a total of 30 patients with secondary brain melanoma underwent radiosensitized treatment (RST). 27 (90%) of the patients had advanced metastatic disease outside the brain and 24 (80%) of them had multiple brain metastasis. MRI and/or CT examination revealed single brain metastatic lesion in 6 patients; 2–5 metastases in 8 patients; 6–19 metastases in 11 patients and 20 or more metastases in the remaining 5 patients. Hematoporphyrin derivative was injected intravenous; 24, 48 and 72 hours after an injection of the sensitizer tumours were irradiated with gamma rays 2 Gy at a time from radioactive ⁶⁰Co (the full dose of the course was 6 Gy). 7 patients underwent a single course of radiosensitized treatment, for the rest treatment was repeated after 1–12 months. There was a control group, which consisted of all 29 patients with malignant brain melanoma treated at the Oncology Institute of Vilnius University from 2000 to 2010 (except for those who were treated with addition of RST).

Results: The effectiveness of RST was already noticeable in the course of treatment. Especially rapid effect was observed in the patients who were in a critical condition. 6 out of those 8 patients began to walk, to speak and even to read within two weeks. Nausea disappeared in 9 patients and headaches disappeared in 14 patients immediately after radiosensitized treatment. CT or MRI examinations conducted after RST courses revealed regression of a tumour in 24 patients. Complete regression of all treated tumours was observed in 3 patients. Two patients are alive and well for more than 140 months and 8 months. A significant response – regression of more than 50% of all brain metastases and remission of the disease for over 6 months was established in 11 patients. A partial response was observed in 10 patients with malignant brain tumours. For the rest 6 patients treatment was ineffective. The median survival of patients treated with addition of radiosensitized treatment was 9 months. Comparing it with the 3.5 months median survival of the control group patients it was statistically significant longer ($P < 0.05$). The Karnofsky performance scale index increased immediately in 23 patients following RST treatment.

Conclusion: Radiosensitized tumour treatment improves the survival of patients with secondary brain melanoma statistically significantly.