# PROTECTIVE EFFECTS OF CHOKEBERRY (*ARONIA MELANOCARPA* (MICHX.) ELLIOTT) FRUIT EXTRACTS AGAINST CISPLATIN-INDUCED NEPHROTOXICITY IN RATS

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Chokeberry (*Aronia melanocarpa* (Michx.) Elliott) is a rich source of pharmacologically active compounds (1). Nephrotoxicity is the most common side effect of cisplatin therapy (2). The aim of the study was to investigate the protective effects of chokeberry fruit extracts in rats with cisplatin-induced acute kidney injury. The dried plant material (whole chokeberry fruit and waste, the rest of the fruit left behind after squeezing the juice) was extracted by maceration using 50% ethanol, and then the extracts were lyophilized in order to better preserve the polyphenols. The content of total polyphenols, anthocyanins, proanthocyanidins and flavonoids in the extracts was determined by the spectrophotometric procedures , while the high-pressure liquid chromatography was used to quantify individual anthocyanins and flavonoids. The protective effects of chokeberry extracts were evaluated by the values of biochemical, antioxidant, and anti-inflammatory markers of acute kidney injury in plasma and tissue, as well as histopathological analysis in different rat groups. By comparing the effects of the tested preparations, it was found that the extracts could reduce kidney damage in cisplatin-treated rats. Histopathological analysis showed the changes localized in the renal tubules, so the protective effects of chokeberry preparations are also observed there. Levels of antioxidant and anti-inflammatory markers in plasma and tissue also indicate a significant protective activity of extracts. The waste extract had more pronounced activity compared to the whole fruit extract, probably due to the higher concentration of polyphenolic compounds, primarily anthocyanins. Chokeberry extracts can alleviate cisplatin-induced nephrotoxicity, due to their antioxidant and anti-inflammatory effects.

**References**

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# PROTEKTIVNI EFEKTI EKSTRAKATA PLODA ARONIJE (*ARONIA MELANOCARPA* (MICHX.) ELLIOTT) KOD CISPLATINOM INDUKOVANOG OŠTEĆENJA BUBREGA KOD PACOVA

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Plod aronije (*Aronia melanocarpa* (Michx.) Elliott) predstavlja bogat izvor farmakološki aktivnih jedinjenja (1). Terapija cisplatinom dovodi do ozbiljnih neželjenih efekata od kojih je nefrotoksičnost najčešći (2). Cilj istraživanja jeste ispitivanje protektivnih efekata ekstrakata ploda aronije kod pacova sa akutnim oštećenjem bubrega izazvanim citostatskim lekom cisplatinom. Osušen biljni material (plod aronije i ostatak ploda koji zaostaje nakon ceđenja soka) ekstrahovan je metodom maceracije 50% etanolom, a zatim su ekstrakti liofilizovani u cilju što boljeg očuvanja polifenolnih jedinjenja. Sadržaj ukupnih polifenola, antocijana, proantocijanidina i flavonoida u ekstraktima određivan je spektrofotometrijskim postupcima, dok je za kvantifikaciju pojedinačnih antocijana i flavonoida korišćena metoda tečne hromatografije pod visokim pritiskom. Efekti preparata aronije procenjivani su na osnovu vrednosti biohemijskih, antioksidativnih i antiinflamatornih markera oštećenja bubrega u plazmi i tkivu, kao i histopatološke analize tkiva, kod različitih grupa pacova. Poređenjem efekata ispitivanih preparata, utvrđeno je da su ekstrakti ispoljili protektivno dejstvo i redukovali oštećenja bubrega kod pacova koji su tretirani cisplatinom. Na histopatološkim preparatima promene usled nefrotoksičnosti cisplatina lokalizovane su najčešće u tubulima bubrega, pa se i protektivni efekti preparata aronije tu uočavaju. Nivoi antioksidativnih i antiinflamatornih markera oštećenja u plazmi i tkivu bubrega takođe ukazuju na značajno protektivno dejstvo ekstrakata aronije. Ekstrakt ostatka ploda nakon ceđenja soka imao je izraženije protektivne efekte u poređenju sa ekstraktom celog ploda, što može biti posledica veće koncentracije polifenolnih jedinjenja, pre svega antocijana. Ekstrakti aronije mogu ublažiti oštećenja bubrega koja su posledica primene cisplatina što se pripisuje njihovom antioksidativnom i antiinflamatornom delovanju.

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