

Antioxidant property of *Grindelia robusta* infusum in the function of steeping time

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Gumplant (*Grindelia robusta* Nutt.) is a perennial plant growing wild in California, cultivated in Europe. *Grindelia robusta* has been found to be especially efficient in spasmodic asthma, giving prompt relief, and cures effectively in cases previously rebellious to medication. Its expectorant effect is also remarkable. Since in the indication fields in which the gumplant used the role of free radicals is proven, the aim of the work was to study the antioxidant properties of plant.

Gumplant was collected from Transylvania, from Botanical Garden of University of Medicine in 2007, Tirgu Mures, Romania. Aqueous extracts were made from different parts of the plant (flower, stem and herba) by infusing for different time (5, 10, 30, 60, 120 min). Total scavenger capacity in extracts was determined by a chemiluminescence method. Hydrogen donor ability and reducing power were measured by spectrometric methods.

Hydrogen donor ability and reducing power vary considerably in the function of the steeping time and the concentration applied. The best results were obtained for concentrated extracts in all cases. Hydrogen donor ability and reducing power of teas generally increased with the increasing steeping time. Total scavenger capacity of flower extract also changed similarly, while significant total scavenger capacity of stem and herba was measured in extracts obtained by 5 min steeping time. In summarizing, the highest antioxidant values were obtained after 120 min steeping time in the case of flower extracts, while the optimal(best) steeping time in case of stem and herba extracts vary in large scale of time depending on the kind of antioxidant measurement.

The antioxidant properties of *Grindelia robusta* extracts depend on several factors, as plant parts, extraction procedure and concentration. In general 30-120 min steeping time proved to gave the highest antioxidant values except for that 5 min steeping time is enough for relevant total scavenger capacity of steam and herba extracts.

Prooxidant effect of trichothecene mycotoxins in poultry

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Fusarium moulds present is most of the temperate climate areas of the world and those are produce trichothecene mycotoxins, such as T-2 toxin, HT-2 toxin, scirpentriol, nivalenol, diacetoxyscirpenol and deoxynivalenol. There are numerous data that trichothecene myco-toxins affect the antioxidant status of animals, primarily due to their pro-oxidant effect. However, not clear whether the pro-oxidant characteristic of these mycotoxins is a direct or indirect effect. Chemical structure of trichothecenes, presence of epoxy group in the trichothecene ring, supports the direct effect through their metabolism by the xenobiotic transforming enzyme system.

The objective of our series of studies was to evaluate dose- and time-related effects of the most important trichothecene mycotoxin, T-2 toxin, on glutathione redox and lipid peroxide status of chickens. The birds were fed with diets experimentally contaminated with different doses of T-2 toxin (0.12, 0.4, 1.5, 2.05 or 2.35 mg kg⁻¹) without or with antioxidant supplementation (vitamin E: 10.5 mg + selenium 0.045 mg animal⁻¹ day⁻¹) in short-term (14 days) or long-term (39 days) studies. In each experiment five animals were exterminated from each group at days 3, 7 and 14 in short-term and at days 21 and 39 in long-term trials. Blood and liver samples were taken, in which reduced glutathione (GSH), malondialdehyde (MDA) concentration and glutathione-peroxidase (GSHPx) activity were measured.

The results showed that there were not dose-related changes in the parameters investigated, however long-term effect of T-2 toxin was found, mainly in liver. According to the changes of the different parameters in different tissues it can be stated that liver showed the most marked changes which followed by blood plasma and red blood haemolysates. Antioxidant