ANTIINFLAMMATORY PROPERTIES OF PEPTIDE COMPLEX OBTAINED FROM THE COD LIVER (GADIDAE) ON THE MODEL OF ADJUVANT ARTHRITIS IN THE RAT

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The aim of the study was to evaluate the antiinflammatory activity of newly designed multipeptide complex (PC) obtained from the cod liver (Gadidae). PC is a standardized extract that contains peptides, phospholipids, free amino acids and micro-elements. Animal models of rheumatoid arthritis (RA) are used extensively in study of pathogenesis of inflammation and the testing of potential anti-arthritic agents. One of the widely used models of RA is adjuvant arthritis in the rat. Experiment was performed on 60 female Wistar rats (180–220g) and was approved by the local ethical commission. RA was induced by subplantar injection into the right hind paw of 100 µl complete Freund adjuvant (CFA, Sigma Aldrich). The pathological signs of RA was developed during the 21 days. Temperature of the paw, leucocytes in the blood were registrated to evaluate the pharmacological activity of the tested medicines. Chondro- and osteoprotective effects were evaluated by X-ray study. The experiment rats were randomly divided into the six groups (n = 10) as follows: negative control group (normal rats without any treatment and RA pathology), positive control group (RA and with placebo treatment), RA+Alflutop (RA pathology with 0,1 mg/kg of anti-inflammatory medicine Alflutop treatment), three groups of RA and PC treatment (RA pathology and PC in doses 0,1; 0,2 and 0,4 mg/kg treatment). Drug administration was performed by intramascular injection during 21 days (from the first day of experiment once a day). The results shown that PC in the dose of 0,1 mg/kg has the extensive anti-exsudative effect. Volume of the affected paw was reduced by 70 % compared with the control group. According X-ray analyse PC has hondro- and osteoprotective effects. Thus, the newly designed multipeptide complex (PC) obtained from the cod liver (Gadidae) have high anti-inflammatory activity and is perspective candidat for the chronic inflammation treatment.

INGREDIENTS AND RAW MATERIALS FOR THE DESIGN OF LOW COST FOODS

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Development of appealing, affordable and healthy food products that can prevent common nutritional problems in people at risk of poverty are the specific goals of the European Commission-funded project *CHANCE* (GA 266331). *CHANCE* project is focused to exploring low cost technologies and ingredients, such as by-products rich in fibre, protein and/or vitamins. To obtain the high dietary fibre ingredients designed for application in meat products two additives were prepared from sugar beet pulp: non-treated fibre (NTF) and treated fibre (TF), and compared with the commercially available product (CAF). Apart from the functionality arising from the high dietary fibre content of the obtained additives, functionality related to the antioxidant activity has been shown to

Table 1. Total phenolic and ferulic acid content in extractable and nonextractable fractions (mg/100 g), (M ± m)

	CAF	TF	NTR
Total phenolics in extractable fraction	21.9 ± 0.7[a]	8.4 ± 0.5[a]	27.2 ± 0.9[a]
Total phenolics in nonextractable fraction	391 ± 59[c]	109 ± 3[b]	265 ± 50[d]
Content of extractable ferulic acid	0.11 ± 0.03[a]	0.30 ± 0.10[a]	1.02 ± 0.2[a]
Content of nonextractable ferulic acid	305.1 ± 68.2[c]	102 ± 26[b]	255 ± 58[d]
Means in each row followed by the same superscript are not significantly different, $P < 0.05$.			

Table 2. Antioxidant activity of extractable and nonextractable fractions, expressed as IC_{50} (g sample/mL), (M ± m)

	CAF	TF	NTR
DPPH activity of extractable fraction	0.89 ± 0.11^{c}	1.93 ± 0.52^{e}	1.12 ± 0.18^{d}
DPPH activity of nonextractable fraction	0.02 ± 0.01^{a}	0.14 ± 0.01^{b}	0.07 ± 0.01^{ab}
AOA activity of extractable fraction	2.45 ± 0.15^{c}	4.84 ± 0.69^{e}	3.21 ± 0.36^{d}
AOA activity of nonextractable fraction	0.80 ± 0.32^{b}	0.59 ± 0.06^{ab}	0.34 ± 0.07^{a}
Reducing activity of extractable fraction	0.27 ± 0.01^{c}	1.01 ± 0.06^{e}	0.48 ± 0.01^{d}
Reducing activity of nonextractable fraction	0.03 ± 0.01^{a}	0.13 ± 0.01^{b}	0.06 ± 0.01^{a}
Chelating activity of extractable fraction	0.22 ± 0.07^{a}	0.47 ± 0.20^{c}	1.24 ± 0.19^{b}
Chelating activity of nonextractable fraction	0.29 ± 0.05^{a}	0.18 ± 0.06^{a}	1.13 ± 0.09^{b}
Means in each row followed by the same superscript are not significantly different, $P < 0.05$			

exist due to relatively high content of ferulic acid in sugar beet fibres (Table 1).

Most of the phenolic substances in the additives were found in nonextractable fractions, which have been shown to possess significantly higher antioxidant activity than extractable fractions (Table 2).

The obtained results suggest the possibility for upgrading the functionality of meat products with incorporated NTF and TF additives, which is in line with the basic concept of CHANCE.

RESEARCHES ON TANNINS CONTAINING MEDICINAL VEGETATIVE RAW MATERIALS STANDARDIZATION

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Objective of the study was standartisation of medicinal vegetative raw material (MVRM) containing tannins. The objects of research were oak and viburnum bark; bistort, bergenia, tormentil and sanguisorba rhizomes; bilberry, bird cherry and alder fruit; sumag and smoke tree leaf. The microscopic, chromotographic, UV-, infrared- and Raman-spectro-scopic characteristics of plant material were done. Tannins were determined by HPLC, UV-spectroscopy, potentiometric titration. The possibility of collagen 1% solutions application as a tannins sedimentation reagent was investigated. The quantitative method of the tannins definition in plants material was developed and patented. UV-, infrared- and Raman-spectroscopic characteristics for 11 types of MVRM and 8 standard samples (glucose, starch, fructose, tannin, pyrogallol, gallic and ellagic acids, rutine) were recorded and described. The spectra are recommended for identification of powders of raw materials. We've studied the diagnostic signs variability of MVRM at crushing. The anatomic and diagnostic signs of crushed and powdered raw materials were specified. The most variability elements (bunches and their parts, mechanical fibers, the oxalate calcium crystals chains; conglomerates of stony cages and fibers) were revealed and described: and also the signs, allowing to identify powders of similar types of raw materials.