

$EC_{50} \cdot OH = 9.0$ mg/ml) increased with the addition of 20 % ($EC_{50} O_2 = 27.4$ mg/ml; $EC_{50} \cdot OH = 2.7$ mg/ml), 30 % ($EC_{50} O_2 = 28.0$ mg/ml; $EC_{50} \cdot OH = 3.2$ mg/ml) and 40 % ($EC_{50} O_2 = 28.8$ mg/ml; $EC_{50} \cdot OH = 7.9$ mg/ml) of dried

plums. The obtained results indicate that the honey with dried plums is a new product with high antioxidant activity and their inclusion in the diet may be recommended to complement other polyphenol sources.

RESEARCH OF EXTRACTION CONDITIONS OF PEPPERMINT AND BOGBEAN RAW MATERIALS AS THE ACTIVE COMPOUNDS OF HERBAL MEDICAL PRODUCT "TRIVALUMEN FORTE"

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Peppermint and bogbean leaves use for preparation of the active substance of the herbal medical product "Trivalumen". The therapeutic role of these components is antispasmodic and choleric action of phenolic compounds and secretolytic action of iridoids. The work's purpose was determination of the optimal extraction conditions of these raw materials in process of herbal medical product "Trivalumen Forte". Raw material was extracted separately by different solvents (93 %, 70 %, 40 % ethanol and water) till the total DER 1:10. Sampling was carried out at interval DER 1:1 for each experiment. In the peppermint and bogbean extracts the amount of total flavonoids was determined by spectrophotometry. The composition of flavonoid fraction of the peppermint extracts and presence of loganin in the bogbean extracts was identified by TLC. The efficacy of extraction process was

assessed using experimental data. The dependency of extraction dynamic of total flavonoids and extractable substances were represented vs. extragent polarity and DER. The optimal conditions of peppermint extract for herbal medical product "Trivalumen Forte" was extraction of raw material by 40 % ethanol at DER 1:7–8. The extract contained not less than 9 % of total of flavonoids in equivalents of hesperidin (dry extract) and composition of this extract include rutin, giperoside, quercetin, chlorogenic and caffeic acids. Yield of extractable substances was not less than 20 %. For bogbean extract the optimal extraction conditions of raw material was by 40 % ethanol at DER 1:6–7. This extract contained not less than 2.5 % of total flavonoids in equivalents of rutin (dry extract) and characterized by the presence of loganin. Yield of extractable matters was not less than 30 %.

THE METHODOLOGICAL APPROACH TO THE IRIDOID ANALYSIS IN HERBAL RAW MATERIALS

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Iridoids are a large group of cyclopentapyran monoterpenoids widely distributed in nature. Iridoids are represented mainly in dicotyledonous plant families namely Plantaginaceae, Lamiaceae, Asteraceae, Gentianaceae, Rubiaceae, Oleaceae. Medicinal plants containing iridoids have a long history of use in the official and folk medicine as bitter tonics, choleric agents, anti-inflammatory and antimicrobial agents, remedies for wounds and skin disorders. Recent studies have shown antioxidant, neuro-, hepato-, cardioprotective and adaptogenic properties of iridoids. A number of iridoids-containing medicinal plants are included in National Pharmacopoeias of leading countries of the world. In Russian Federation adequate and maximum acceptable intake levels for iridoids (aucubin, harpagoside, oleuropein, asperulosidic deacetylasperulo-

sidic acid) were established by «Unified sanitary-epidemiological and hygienic requirements for goods subject to sanitary and epidemiological surveillance (monitoring)». Standardization of iridoids containing herbal materials is hindered by lack of reliable methods for determination of specific indicative iridoids such as aucubin and catalpol for genus *Plantago* and *Veronica*, harpagide, leonuride for *Leonurus* (Lamiaceae), oleuropein for *Olea* (Oleaceae), loganin for *Menyanthus* (Menyanthaceae), asperulosidic and deacetylasperulosidic acid for *Morinda* (Rubiaceae), etc. A quantitative HPLC–DAD/ESI–TOF–MS method was developed for the simultaneous determination of iridoids mentioned above. Optimal chromatographic conditions were achieved using gradient elution with 0.1 % aqueous formic acid and methanol. Analytes were identified