ETHIOPIAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 10, Issue 12, Dec-2023 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

BIOLOGICAL DESCRIPTION OF THE GENUS CLEMOCOPTERA OF THE CHENOPODIACEAE FAMILY

Zufarova Iroda Zufar kizi
JSPU master of exact and natural sciences (Biology)

Abstract:A phytochemical study of some plant species of the genus Climacoptera was carried out, qualitative and quantitative analysis was determined, technological regimes for the isolation of biologically active substances were selected, and 12 working extracts were obtained. The following flavonol compounds have been isolated in the individual state: 3-O-β-D-glucopyranosyl-(1 6)- -L-rhamnopyranoside of quercetin - rutin, 3,5,7,3,4 - pentahydroxyflavone - quercetin, 3-O- - Quercetin D-galactopyranoside (hyperin), 3,5,7,4-tetrahydroxy-3-methoxy-flavone (isorhamnetin), 3-O-β–D–glucopyranosyl-(1 6)--L – isorhamnetin rhamnopyranoside – narcissin.
Keywords: genus clemocoptera, obtusifolia, method, hyperin, flower.

INTRODUCTION: In recent years, research has been expanding on wild plants that grow widely on saline and arid soils of the Republic of Uzbekistan and have adapted to extreme conditions.
These include plants of the genus Climacoptera, the family Chenopodiaceae, widely growing on the territory of the Republic of Uzbekistan. Plants of the genus Climacoptera number 23 species; 14 species are found in Uzbekistan. Uzbekistan species of plants of the genus Climacoptera (Climacoptera) have not been subjected to systematic research, therefore the study of the chemical composition, the development of methods for isolating biologically active substances and the study of biological activity in order to develop new medicines and herbal remedies is an urgent task.
MATERIALS AND METHODS: Objects of study – above-ground masses of plants Climacoptera obtusifola (K. obtusifolia), C. crassa (K. fleshy), C. brachiata (K. opposite-leaved), C. ferganica (K. fergana) of the family Chenopodiaceae (Chenopodiaceae) harvested during the flowering phase in 2010 from Western Uzbekistan and C. obtusifolia (C. obtusifolia) - from Tajikistan.

A comparative qualitative phytochemical analysis of all five species of plants of the genus Climacoptera (Climacoptera) for the presence of biologically active substances indicates that all species are promising, however, the reserves of plant objects allow us to choose only - C. obtusifola (K. obtusifolia), C. brachiata (K. opposite-leaved), C. ferganica (K. Fergana).

To isolate biologically active compounds from three species of plants of the genus Climacoptera (Climacoptera) C. obtusifola (K. obtusifolia), C. brachiata (K. opposite-leaved), C. ferganica (K. fergana), a selection of solvents was carried out, and the technological regime was optimized. In order to optimize the extraction process of biologically active substances, the influence of raw material-solvent ratios, extraction time, and temperature was studied. The most suitable 70% methyl alcohol (raw material: extractant ratio 1:6-8, 3 days, room temperature) under these conditions extracts up to 60% of biologically active substances.

In order to obtain biologically active complexes, all three species of plants of the genus Climacoptera (Climacoptera) C. obtusifola (K. obtusifolia), C. brachiata (K. opposite-leaved), C. ferganica (K. Fergana) were processed. The crushed air-dried raw materials were subjected to extraction by infusion with 70% aqueous methanol at room temperature for 3 days. The extraction is repeated twice. The combined extract is concentrated and extracted successively with petroleum ether, chloroform, ethyl acetate and n-butanol; As a result, 12 working extracts were obtained - petroleum ether, chloroform, ethyl acetate, butanol.
RESULTS AND DISCUSSION: Using two-dimensional paper chromatography and TLC in various solvent systems, it was established that the main groups of biologically active substances in the

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above-ground mass of the studied plants are saponins, flavonoids, amino acids, mono-, oligo- and polysaccharides, and phenolic acids.

Climacoptera ferganica (K. fergana): with humidity - 5.32%, ash content - 39.8%, extractives - 64.60%, tannins - 1.22%, carbohydrates - 1.84%, saponins - 2.26%, flavonoids - 1.16%;

Climacoptera brachiata (K. oppositeifolia),: with humidity - 4.75%, ash content - 40.7%, extractives - 62.37%, tannins - 1.35%, carbohydrates - 1.18%, saponins - 2.27%, flavonoids -1.33%;

Climacoptera crassa (K. fleshy): with humidity - 4.27%, ash content - 42.4%, extractives - 68.54%, tannins - 1.59%, carbohydrates - 2.17%, saponins - 1.32%, flavonoids - 1.19%;

Climacoptera obtusifolia (K. obtusifolia): at humidity – 7.8%; ash content - 41.88%; extractives - 52.6%; tannins - 1.35%; carbohydrates - 1.79%; saponins – 2.33%; flavonoids - 1.4%.

Petroleum extract of three species of plants of the genus Climacoptera (Climacoptera) C. obtusifola (K. obtusifolia), C. brachiata (K. opposite-leaved), C. ferganica (K. fergana) was submitted for analysis of volatile substances on GC-MS (gas chromatography using mass spectrometry). As a result, it was determined that the petroleum extract of Climacoptera obtusifola contains 26 substances, Climacoptera brachiata - 25 substances, Climacoptera ferganica -29 substances, of which in large quantities in plants of the genus Climacoptera obtusifola: 2-methylheptane (9.28%), 2.4 - dimethylhexane (9.33%), octane (8.03%), 2-methylhexadecanol-1 (6.61%), nonadecanol (9.32%), nonane (6.93%);

CONCLUSION: Butanol extracts of C. obtusifolia (K. obtusifolia), C. brachiata (K. opposite-leaved), C. ferganica (K. fergana) are concentrated and subjected to column chromatography on Sephadex LH-20 (eluent water, 5%, 10%, 15% , 20%, 25%, 30%, 40%, 50%, 60%, 70% methanol-water and 100% methanol). 150 fractions were collected, in which flavonoids were found in small quantities and terpenoids and saponins in sufficient quantities.

Ethyl acetate and butanol extracts of C. obtusifolia (K. obtusifolia), C. brachiata (K. oppositeifolia), C. ferganica (K. fergana) were submitted to the Xinjiang Technical Institute of Chemistry and Physics, Urumqi (PRC) for the study of biological activity.

1. A component analysis of five plant species of the genus Climacoptera (Climacoptera) was carried out.

2. Technological modes for the isolation of biologically active substances have been selected.

3. Using the GC-MS method, the composition of volatile substances in petroleum ether was determined in three species of plants of the genus Climacoptera (Climacoptera) C. obtusifolia (K. obtusifolia), C. brachiata (K. opposite-leaved), C. ferganica (K. Fergana).

4. The composition of ethyl acetate and butanol extracts was studied.

5. Using HPLC, a flavonoid complex was obtained from Climacoptera obtusifolia (K. obtusifolia) plants.

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