IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Research Article
April 2019 Vol.:15, Issue:1

Pharmacologically Active Alkaloids of *Narcissus L.,* Introduced in Georgia

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Submission: 21 March 2019
Accepted: 26 March 2019
Published: 30 April 2019

HUMAN JOURNALS
www.ijppr.humanjournals.com

Keywords: *Narcissus tazetta, Narcissus poeticus,* alkaloids, galanthamine, lycorine, anticholinesteratic effects.

ABSTRACT

There have been studies species of *Narcissus L.*: *Narcissus tazetta L, Narcissus poeticus L.,* introduced in Georgia. The species of *Amaryllidaceae* family contain pharmacologically active alkaloids: galanthamine, with anticholinesteratic effects and lycorine with mucolytic effects. The outcome of alkaloids' sum from the overground parts of *Narcissus tazetta L.* is 0.30%, from the bulbs - 0.92%, from the overground parts of *Narcissus poeticus L.* -0.24%, from the bulbs – 0.45% [3].

INTRODUCTION

The species of *Amaryllidaceae* family are known, as a fertile raw material ro receive pharmacologically active alkaloids: galanthamine and lycorine, which have anticholinesteratic and mucolytic effects [1].

The species of *Narcissus L*, introduced in Georgia, also belongs to *Amaryllidaceae* family.

MATERIALS AND METHODS

The objects of the work are overground parts and bulbs of *Narcissus tazetta L. and Narcissus poeticus L.*, introduced in Georgia. *Narcissus tazetta L. was* collected on the beach of Black Sea and in area of Kobuleti, *Narcissus poeticus L.* – collected in Batumi botanical garden [2]. We have researched vegetative organs of plants for the alkaloids composition, which were collected in the period of fructification. We were getting the sum of alkaloids from preliminarily alkaloided air-dry pounding bulbs and overground parts. We were extracting with chloroform after organic solvent evaporation, acid-base processing and extraction with chloroform for the second time, we were getting the sum of alkaloids: which outcome from the overground parts of *Narcissus tazetta L.* is 0.30%, from the bulbs - 0.92%, from the overground parts of *Narcissus poeticus L.* -0,24%, from the bulbs – 0.45% [3].

We have got individual alkaloids from fraction of the alkaloids sum on the silica gel column (L 100/160) with chromatographic method and elution was performed with chloroform-methanol mixture.

We were making qualitative analysis of the sum and individual substances in the solvent mixture: chloroform: methanol: 25% ammonia (86:13:1) (1), chloroform: methanol (4:1) (2). Stationary phase: silica gel $_{254}$ Merck, aluminum plates; The experimental researches was conducted in parallel mode. The separated spots were detected with Dragendorf reagent [4].

RESULTS AND DISCUSSION

From the study for alkaloids composition of *Narcissus tazetta L.*, we established that overground parts of this plant contain: lycorine, galanthamine, tazettine, dimethyl homolycorine, the bulbs contain: lycorine, galanthamine, tazettine, gemanthamine. Demethylhomolycorine and gemanthamine are isolated from *Narcissus tazetta L*, at first.

Overground parts of *Narcissus poeticus L.* cultivated in Georgia, contain: lycorine, tazettine, The bulbs contain: lycorine, tazettine, galanthamine [5].

From the study of the sum of alkaloids and dynamics of galanthamine accumulation according to phases of vegetation in the bulbs, we have established that the sum of alkaloids and maximal contain of galanthamine is at the end of phase of vegetation, therefore it is advisable to collect bulbs in this period. The results of study are shown in the table.

Table 1. Dynamics of galathamine accumulation and alkaloids sum in the bulbs of *Narcissus tazetta L.* and *Narcissus poeticus L.*

Phase of vegetation	**The content of the alkaloids sum on the air-dry raw materials (%)**		**The content of galanthamine on the air-dry raw materials (5)**	
	N. tazetta L	***N. poeticus L.***	***N. tazetta L***	***N. poeticus L.***
Beginning of vegetation	0.44	0.27	0.06	0.03
Building and beginning of fruiting	0.76	0.38	0.10	0.04
Fruiting	0.82	0.43	0.13	0.07
Fructification	0.92	0.45	0.17	0.08
The end of vegetation	1.13	0.52	0.20	0.12

CONCLUSION

Based on the results of performed study, we can summarize that *Narcissus tazetta L., Narcissus poeticus L.* are perspective plants for receiving galanthamine and lycorine characteristic for *Amaryllidaceae* family isochinolyned group.

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