ABSTRACT

Perennial plants from the Amaryllidaceae family are generally known for their beauty but also like herbs which contain wide range of alkaloids. To these days more than 500 alkaloids have been isolated. Amaryllidaceae alkaloids (AmA) are derivatived from aminoacid tyrosine and divided into nine basic groups. Biological activity of these substances icludes antitumor, antibacterial, antifungal, antiviral, antimalarial activity and some of them are used for treatment Alzheimer's disease (AD).

Narcissus cv. PROFESSOR EINSTEIN have been choosen thanks to previous research of summary extract. Twelve alkaloids have been detected by GC-MS and ten of them have been identified (e.g.: lykoramine, pluviine, haemanthamine, pancracine, homolycorine). Due to this diversity of alkaloids and the fact that summary extract has relatively high inhibitory activity (IC_{50} = 49,99 ± 5,38 μg/mL) against HuBuChE Narcissus have been appropriate for isolation of the alkaloids and for further study of their biological activity.

Summary ethanolic extract for gain pure compounds was prepared from 34.3 kg fresh bulbs. Separation was initiated by column chromatography and extract was divided into almost 500 fractions. Some of them were put together owing to TLC analysis and finally 27 subfractions were formed. Subfraction Nr. 26 was selected for following isolation of the pure alkaloids. The subfraction was repeatedly divided by preparative TLC. Thanks this method one pure compound was obtained. After structural analysis (NMR) it was found that isolated alkaloid is 9-*O*-demethylhomolycorine.

Then were measured biological activities of 9-*O*-demethylhomolycorine against HuAChE, HuBuChE and POP and GSK-3β. Cytotoxic activity was tested on ten tumor cell lines (Jurkat, MOLT-4, A549, HT-29, Caco-2, PANC-1, A2780, HeLa, MCF-7, SAOS-2) and on two healthy cell lines (MRC-5, FHs-74Int). Activity against liver stage *Plasmodium berghei* in vitro was determined, too. Unfortunately 9-*O*-demethylhomolycorine showed promising activity only against GSK-3β (IC_{50} = 30,00 ± 0,71 μM), in other tests 9-*O*-demethylhomolykorin was non active.

Keywords: Amaryllidaceae, *Narcissus* cv. PROFESSOR EINSTEIN, Alzheimer's disease, Cytotoxicity, Antiplasmodial activity