# PREPARATION OF GALANTAMINE HYDROBROMIDE FROM LEAVES OF *Ungerniya Victoris* BY AQUEOUS ALCOHOL EXTRACTION

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Galantamine hydrobromide isolated from leaves of *Ungernia Victoris* Vved. is known as a medicinal preparation for treating residual effects of poliomyelitis [1].

We studied the distribution of galantamine between $CHCl_3$ and buffers with various pH values [2, 3] in order to develop a rational approach for preparing galantamine hydrobromide. Based on the results, we found that the $pH_{1/2} = 3.8$. Therefore, galantamine is a moderately basic alkaloid.

Several methods are known for isolating moderately basic alkaloids from plant material [3-7]. The previously developed [4] ion-exchange method suffers from multiple steps and a relatively low yield.

Extraction of the raw material by aqueous acid solutions followed by liquid—liquid extraction is also economically prohibitive. Stable emulsions are formed, the separation of which is accompanied by large losses of the main product.

A rational and economically feasible approach was aqueous alcohol extraction of plant material with subsequent purification.

Following this method, ground leaves of *U. Victoris* (80 kg) were soaked in an extractor and extracted six times with aqueous ethanol (80%) in a 1:4.2 ratio ("mirror" formation). The resulting extracts were concentrated in a rotary evaporator to 8.0-11.0% of the initial volume, i.e., to an aqueous residue, to afford the extract (65 L).

The extract was made basic with $NH_4OH$ (25%) until the pH was 9.0-10.0. Alkaloids were extracted three times with $CHCl_3$ (20 L each). The $CHCl_3$ extracts were combined. The alkaloids were extracted by $H_2SO_4$ solution (5%) (3 × 10 L). Nonbasic impurities were removed from the acidic solution of alkaloids by washing with $CHCl_3$ (2 × 10 L). The washed acidic solution of alkaloids was made basic until the pH was 9.0-10.0. Alkaloids were extracted with $CHCl_3$. The $CHCl_3$ solution was evaporated to afford total alkaloids (115 g or 0.145% of the air-dried mass).

The total alkaloids (115 g) were dissolved in acetone (0.230 L), cooled, stirred, and treated with conc. HBr. The resulting precipitate of galantamine hydrobromide was separated and recrystallized from ethanol (55%) to afford galantamine hydrobromide (40 g) of purity 98-100% or 0.05% of the air-dried mass of raw material.

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