CHEMICAL-TOXICOLOGICAL ANALYSIS OF FOXTAIL SOPHORA PLANT ALKALOIDS

M. E. Mammadova

The main goal in preparing the scientific work is "Foxtail Sophora" - "Sophora alopecuroides L." taking the alkaloid complex from the plant and analyzing it by thin-layer chromatography (TLC), identifying the individual alkaloid with the corresponding alkaloid in the literature, and carrying out toxicological analysis of the obtained alkaloid complex in the liver of cattle.

Used as material for scientific work: raw material of Foxtail Sophora plant - aerial part (leaf and stem) 100 g. It was collected from Saray settlement in 2020, stored in a dark room, dried and crushed. chloroform:methanol:ammonia 9:1:0.1 and dichloromethane:methanol:25% ammonia 2:8:0.2 as TLC solvent; was taken in proportion. Aluminum plate – Macherey-Nagel Alugram® Sil G/UV254 (Germany). Clarifying reagent – Dragendorf reagent. Ammonia (10%, 25%), sulfuric acid (8%), ethyl alcohol (95%), chloroform, dichloromethane, litmus paper, blackberry liver. Methods: Alkaloids extraction method, TLC separation into individual alkaloids.

To determine the alkaloid content and number of the aerial part of the foxtail Sophora plant, 100 g of the sample was treated with 10% ammonia solution, and after 2 hours, chloroform was added until the surface of the raw material was completely covered with the solvent. After 48 hours, the extract was separated and a new portion of chloroform was added in the same manner. The extraction process was repeated three times. The extracts were combined and concentrated to a volume of 100 ml on a water bath. The chloroform solution was treated 6 times with 100 ml of 8% sulfuric acid solution in a separatory funnel. After the sulfuric acid solutions were combined, they were basified with 25% ammonia solution to pH 10 by cooling. Then the aqueous solution is treated with chloroform (100 ml) 6 times. At this time, the alkaloids in salt form were transferred to the chloroform part, and the chloroform extracts were combined and concentrated in a water bath until 10 ml remained. The TLC method was used to determine alkaloids. The chloroform substance was concentrated to a dry mass (≈0.71 g), dissolved in ethyl alcohol (20 ml), added to minced liver (100 g) and kept at a temperature of about 36℃ with periodic stirring for 5 hours. After this time, 95% ethyl alcohol was added until the material was covered. Then, the mixture was acidified with 10% oxalic acid until the pH value was 2-3 and kept at a temperature of 25-30℃ for 1 day with periodic mixing. After 1 day, the alcoholic extract was separated from the crushed material and this process was repeated 3 times, 1 day each time. Acidic alcoholic extracts were filtered through a paper filter soaked in ethyl alcohol. The combined extract was transferred to a porcelain dish and condensed in steam until a syrup-like mixture was obtained. Ethyl alcohol (96%) was added to the resulting mass until precipitation of extraneous mixtures was complete. The resulting precipitate was again filtered through a paper filter soaked in ethyl alcohol. The operation was repeated 5 times until no precipitate was removed due to the effect of alcohol. Purified water (25 ml) was added to the syrup-like mass cleared of extraneous impurities, and the obtained precipitate was again filtered through a paper filter. The acidic water-alcohol mixture was transferred to a separatory flask, basified with 25% ammonia by cooling under running water until pH 10, and extracted 3 times with chloroform, 15 mL each time, using a fresh portion of the solvent each time. The obtained extracts were collected and dehydrated with anhydrous sodium sulfate and by evaporation, 2 samples with a volume of 2 ml were obtained and analyzed by TLC method and compared with the previous extracts.

As a result, 3 orange spots belonging to alkaloids (Rf = 0.43, 0.58, 0.33) and 3 orange spots belonging to alkaloids (Rf = 0.9, 0.17, 0.13) were determined in the chloroform extract.