THE ISOLATION OF FRUTICIN FROM THE SEEDS OF Amorpha fruticosa

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Fruticin, which has been isolated from the seeds of Amorpha fruticosa [1, 2] is recommended as a drug for the treatment of paroxysmal tachycardia [3].

In order to develop a rational method for the isolation of fruticin, we have tested as extractants acetone, ethanol, 70% ethanol, chloroform–methanol (4:1), and dichloroethane–ethanol (1:1). Of the solvents mentioned, the mixture of dichloroethane and ethanol (1:1) proved to be a good extractant. The results of the investigations performed have enabled us to develop a method for isolating fruticin without preliminary defatting [4].

The comminuted seeds (50 kg) of A. fruticosa were charged into a 200-liter extractor and covered with 100 liters of the dichloroethane–ethanol (1:1) mixture. After steeping at room temperature for 8-10 hours, the extract was poured off, and subsequent extractions were performed with 70 liters of the mixture in each case, the conditions being the same as in the first extraction. The bulk of the fruticin was extracted by six treatments. The combined extract (420 liters) was evaporated in a circulating vacuum evaporating apparatus at 40-45°C (vacuum of 600 mm Hg) to incipient turbidity of the solution. The volume of the concentrated extract (42 liters) amounted to 10% of the initial volume. The concentrated extract was poured into a crystallizer and was cooled to room temperature over 10-12 h. A precipitate deposited which was separated on a vacuum filter, dried in a vacuum drying oven at 50-60°C, and then ground (1156 g) and treated with 30 liters of boiling methanol until it had dissolved completely.

The hot methanolic solution was filtered and was left at room temperature for two days. Fruticin precipitated, and it was separated off by suction filtration. This gave 583 g of crude fruticin. The crystals of fruticin that deposited additionally from the evaporated mother solution were added to the main batch. The total yield of crude fruticin was 710 g, and by recrystallizing this successively from water and methanol 350 g of pure fruticin was obtained, corresponding to 0.7% of the weight of the raw material.

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