THE ISOLATION OF PSOBERAN FROM THE LEAVES OF *Ficus carica*

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The considerable amount of psoralen and bergapten in cultured varieties of fig, and also in wild-growing varieties has permitted the use of the local Central Asian varieties of *Ficus carica* (Uzbek yellow) to be used as an industrial raw material for obtaining the preparation psoberan [1-3], which possesses a strong photosensitizing action [4]. A spectrophotometric analysis of the preparation has shown that the psoralen and bergapten are present in it in a ratio of approximately 3:1 [5].

In developing a rational method for the isolation of psoberan we have studied the extracting action of individual organic solvents and mixtures of water and organic solvents on the yield of the substance undergoing extraction. The extractants used were hot water, methanol, ethanol, acetone, and binary mixtures of water and alcohols and of water and acetone with various concentrations of the organic component in them. Of the solvents mentioned, the best extractant proved to be 40% ethanol.

In order to determine the time of extraction we investigated the kinetics of the extraction of psoberan, for which purpose we analyzed the nature of the change in its concentration with time. The time of achieving phase equilibrium in the first contact of the phases was 3 h, in the second 2 h, and in the third 1 h. The results obtained have enabled us to develop a method for the isolation of psoberan.

The comminuted leaves (40 kg) of the plant *Ficus carica* were charged into a 300-liter extractor and were covered with 160 liters of a binary mixture consisting of 40% of acetone and 60% water. After steeping for three hours, the extract was decanted off, and the extraction with the mixture of solvents was repeated twice more using 60 liters of extractant each time.

The combined extract was evaporated in a circulating vacuum evaporator at 40-50°C (vacuum of 600 mm Hg) until the organic component had been eliminated from the extract.

The concentrated extract was cooled for a day at 20°C. The precipitate that deposited was separated off on a vacuum filter and was dried in a vacuum drying chest at 60-70°C. The dried residue (400 g) was purified in a column of alumina. The furocoumarins were eluted with benzene (30 liters). The weight of dry residue from the evaporated benzene eluate was 240 g.

After recrystallization from ethanol and drying, 200 g of psoberan (0.5% of the weight of the raw material) was obtained.

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