When (II) was heated in 10% sulfuric acid, a product was obtained the NMR spectrum of which lacked the signal of methylenedioxy group but contained the signal of five methoxy groups.

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INFLUENCE OF VARIOUS DENATURING AGENTS ON THE SOLUBILITY OF GOSSYPULIN

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One of the important factors influencing the solubility of proteins is denaturation [1]. We have previously [2] shown a change in the solubility of gossypulin on acid denaturation, and also with the varying degree of denaturation on chemical modification (with succinic and acetic anhydrides). A disturbance of the quaternary structure of gossypulin with only small changes in the secondary structures led to a rise in the pH maximum of the precipitation (pH 4.3-4.6) of the proteins from dilute solution. The acid-denatured protein precipitated from dilute solution at lower pH values (3.5-3.8) than the native gossypulin (pH 4.0).

In the present communication we give results showing the changes in the solubility of gossypulin under the action of various types of denaturing agents. To study solubility we used the method of turbidimetric titration of dilute solutions, C 0.03% [3]. Table 1 gives the pH values of the precipitation maxima of the denatured proteins under various conditions. Thermal treatment of the protein in 10% NaCl solution and in the absence of salt, and also in 8 M urea solution or in NaOH solution (pH 12.5) at room temperature led to a considerable broadening of the pH range of the precipitation maximum in comparison with that of a native sample of gossypulin and of the acid-denatured protein [2]. At the same time, in spite of the different types of denaturation, the addition of pectin (at a weight ratio of protein to pectin of 4:1) led to a shift of the pH of the precipitation maximum into the more acid region, i.e., it improved its solubility in the neutral region.

TABLE 1. pH Values of the Precipitation Maxima of Denatured Proteins under Various Conditions

Protein sample	Without additives	Apple pectin	Ca^{2+} ions	Ca^{2+} ions + pectin
Gossypulin (with 0.6% of gossypol)	4,0	3,0	4,0—4,5	2,8—2,9
Gossypulin in distilled water (100°C, 15 min)	3,3—4,2	3,0—3,3	3,0—4,5	3,0—3,3
Gossypulin in 10% NaCl solution (100°C, 15 min, after dialysis)	4,0—5,6	3,2—3,8	3,5—5,7	3,2—3,6
Gossypulin in 8 M urea solution (24 h, after dialysis)	4,0—5,5	3,3—3,8	4,0—5,8	3,2—3,6
Gossypulin in NaOH solution (pH 12.5, 60 min, after dialysis)	4,2—5,2	3,2—3,5	4,0—5,5	3,1—3,4

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