A NEW PROCEDURE FOR SYNTHESIS OF TRANS-3-(P-HYDROXYCINNAMOYL)-4-HYDROXY-6-METHYLPYRONE-2 FROM DEHYDROACETIC ACID

S. Bruyakin, A. Pyrko

Belarusian State University, ISEI BSU,
Minsk, Republic of Belarus
pyrko@yandex.ru

This paper presents the results of an investigation of the Knoevenagel reaction of dehydroacetic acid with p-hydroxybenzoic aldehyde under various conditions to determine the environmentally safe method of synthesis of trans-3-(p-hydroxycinnamoyl)-4-hydroxy-6-methylpyrone-2. An effective technique was developed for preparing this compound by heating the components in isopropyl alcohol using tris(hydroxymethyl)aminomethane acetate as catalyst. The attempt to introduce two p-hydroxycinnamoyl residues in the dehydracetic acid molecule under these conditions was unsuccessful.

Keywords: organic synthesis, Knoevenagel reaction, dehydroacetic acid, *trans*-3-(p-hydroxycinnamoyl)-4-hydroxy-6-methylpyrone-2.

Dehydroacetic acid is a universal compound and is used for the synthesis of various organic substances that are used as food additives, antihypertensive agents, antimicrobial, insecticidal, cosmetic and promoters for the production of hematocytes. Guided by the principles of "green" chemistry, we investigated the condensation of Knoevenagel dehydroacetic acid (1) with p-hydroxybenzoic aldehyde (2) in environmentally safe solvents using an amino acid catalyst. During the reaction, trans-3- (p-hydroxycinnamoyl) -4-hydroxy-6-methylpyrone-2 (3) is formed (Fig. 1).

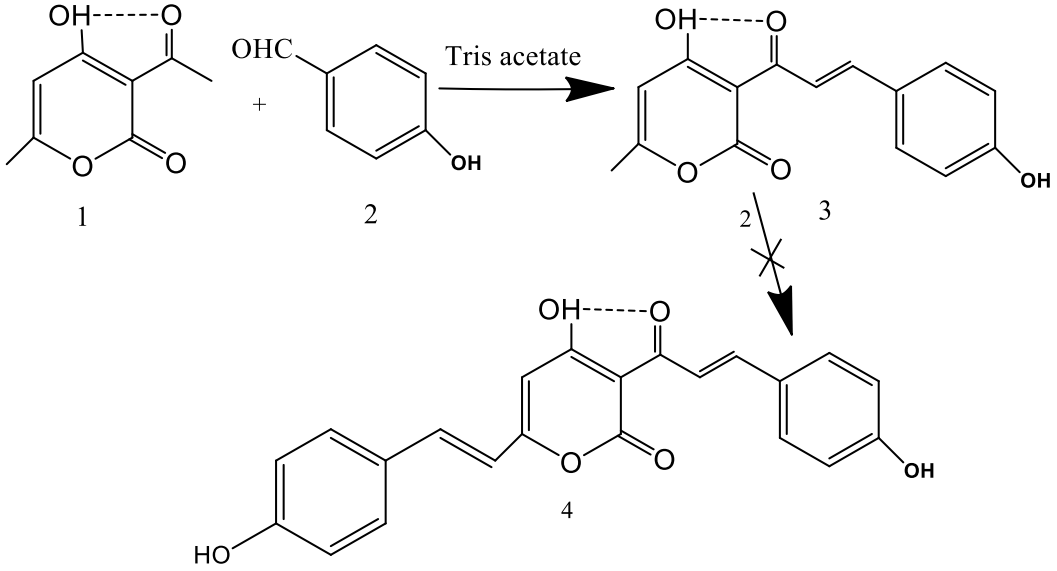

Fig. 1. Synthesis of trans-3- (p-hydroxycinnamoyl)-4-hydroxy-6-methylpyrone-2

Conclusion

1. Condensation of Knoevenagel dehydracetic acid and p-dimethylaminobenzoic aldehyde in various solvents has been studied.

2. It has been established that the maximum yield of trans-3- (p-dimethylaminocinnamoyl) -4-hydroxy-6-methylpyrone-2 is observed during the reaction in isopropyl alcohol.

3. An ecologically safe method for the synthesis of trans-3- (p-dimethylaminocinnamoyl) -4-hydroxy-6-methylpyrone-2 was developed.