

SYNTHESIS OF (E)-4-(2-(5-MERCAPTO-4-PHENYL-4H-1,2,4-TRIAZOL-3-YL)VINYL)-2-METHOXYPHENOL FROM FERULIC ACID

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Introduction

The cause of human body aging is an interesting, but difficult task. There are two theories of aging: telomeric theory and free-radical theory. The free-radical theory influences negatively by action of the active oxygen (oxygen ions, free radicals, organic and inorganic peroxides) on proteins, lipids and nucleic acid. Antioxidants can prevent destructive action of the active oxygen, for example ferulic acid.

Aim

Synthesis of (E)-4-(2-mercapto-4-phenyl-4H-1,2,4-triazol-3-yl)vinyl)-2-methoxyphenol from ferulic acid.

Material and methods

The process of obtaining consists of 5 steps: synthesis of ferulic acid, preparation of methyl ester of ferulic acid, obtaining hydrazide of ferulic acid, preparation of (E)-2-(3-(4-hydroxy-3-methoxyphenyl)acryloyl)-N-phenyl-hydrazinecarbothioamide, obtaining (E)-4-(2-(5-mercapto-4-phenyl-4H-1,2,4-triazol-3-yl)vinyl)-2-methoxyphenol.

Results

First step: Vanillin, malonic acid, pyridine and piperidine are mixed in the dark flask. The mixture is leaved for 1 week in a dark place. Then it heated for 30 hours in a water bath at 40 °C. Then mixture was poured in a glass with ice and concentrated hydrochloric acid. White precipitate observe one hour later. The precipitate was filtered. The substance is dried between sheets of paper in a dark place. Second step: Ferulic acid is added to a mixture of methanol and concentrated sulfuric acid. The mixture was heated for 6 h. Methanol was evaporated. Then the mixture is poured in a glass with cold water. Oily liquid falls to the bottom of the glass. Third step: Methyl ester of ferulic acid was dissolved in methanol with hydrazine hydrate. The mixture is refluxed 2 h. Precipitated on the next day. The mixture was poured in cold water. Fourth step: Hydrazide of ferulic acid is dissolved in methanol and added phenylisothiocyanate. The mixture was heated for 30 minutes. Fifth step: (E)-2-(3-(4-hydroxy-3-methoxyphenyl)acryloyl)-N-phenyl-hydrazine-carbothioamide is dissolved in a solution of sodium hydroxide. The mixture became greenish-yellow. The mixture was boiled for 30 minutes. Then carried out the neutralization reaction. White precipitates.

Conclusion

Yield (E)-4-(2-mercapto-4-phenyl-4H-1,2,4-triazol-3-yl)vinyl)-2-methoxyphenol is 10% by weight of ferulic acid.