

Experiment

Synthesize 7-hydroxy 4-methyl coumarin

Aim:- To synthesize 7-hydroxy 4-methyl coumarin from resorcinol.

Requirements:-

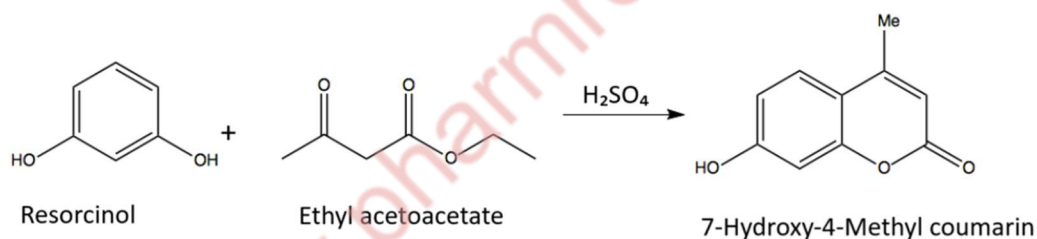
Chemicals:- Resorcinol, Concentrated H_2SO_4 , Ethyl acetoacetate, Sodium hydroxide

Glassware:- Conical flask, Reflex condenser, Beaker, Measuring cylinder, Funnel, Glass rod

Equipment:- Weighing balance, Vacuum filter

Principle:- 7-hydroxy-4-methylcoumarin can be synthesized from resorcinol and ethyl acetoacetate using the Pechmann reaction. The reaction involves transesterification, intramolecular hydroxyalkylation, and dehydration.

Reaction:-



Procedure:-

1. Add resorcinol (1gm), ethyl acetoacetate (1.34ml drop wise), and a catalyst to a flask.
2. Heat the mixture to a specific temperature (10°C).
3. React for a specific amount of time (2hrs).
4. Remove the catalyst by filtration with filter paper.
5. Reduce the pressure and steam off the methyl acetoacetate to obtain a crude product.
6. Add the crude product to frozen water.
7. Separate out the precipitate, filter it, and collect it.
8. Recrystallize the precipitate with ethanol to obtain the pure product.

Calculation:-

Theoretical yield:-.....g

Practical yield:-.....g

Formula:- % yield=(Practical yield)/(Theoretical yield)×100

Result:- The 7-hydroxy-4-methyl coumarin was synthesized successfully from resorcinol and percent % yield was found to be

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