



A Publication
of Reliable Methods
for the Preparation
of Organic Compounds

Working with Hazardous Chemicals

The procedures in *Organic Syntheses* are intended for use only by persons with proper training in experimental organic chemistry. All hazardous materials should be handled using the standard procedures for work with chemicals described in references such as "Prudent Practices in the Laboratory" (The National Academies Press, Washington, D.C., 2011; the full text can be accessed free of charge at http://www.nap.edu/catalog.php?record_id=12654). All chemical waste should be disposed of in accordance with local regulations. For general guidelines for the management of chemical waste, see Chapter 8 of Prudent Practices.

In some articles in *Organic Syntheses*, chemical-specific hazards are highlighted in red "Caution Notes" within a procedure. It is important to recognize that the absence of a caution note does not imply that no significant hazards are associated with the chemicals involved in that procedure. Prior to performing a reaction, a thorough risk assessment should be carried out that includes a review of the potential hazards associated with each chemical and experimental operation on the scale that is planned for the procedure. Guidelines for carrying out a risk assessment and for analyzing the hazards associated with chemicals can be found in Chapter 4 of Prudent Practices.

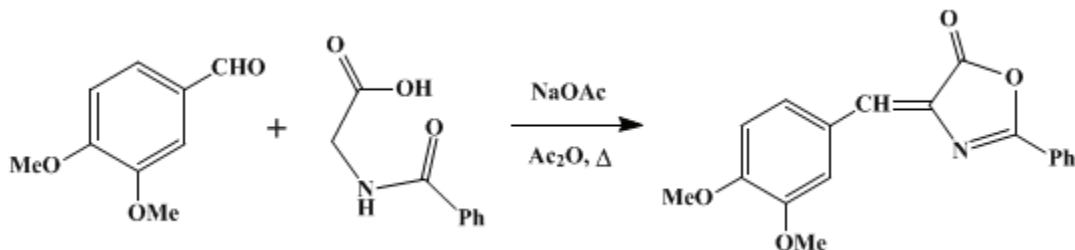
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These paragraphs were added in September 2014. The statements above do not supersede any specific hazard caution notes and safety instructions included in the procedure.

Organic Syntheses, Coll. Vol. 2, p.55 (1943); Vol. 13, p.8 (1933).

AZLACTONE OF α -BENZOYLAMINO- β -(3,4-DIMETHOXYPHENYL)-ACRYLIC ACID

[5(4)-Oxazolone, 2-phenyl-4-veratral-]



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1. Procedure

In a 2-l. Erlenmeyer flask, a mixture of 160 g. (0.96 mole) of [veratraldehyde](#) ([Note 1](#)), 192 g. (1.07 moles) of powdered, dry [hippuric acid](#) ([p. 328](#)), 80 g. (0.98 mole) of powdered, freshly fused [sodium acetate](#), and 300 g. (278 cc., 2.9 moles) of high-grade [acetic anhydride](#) is heated on an electric hot plate, with constant shaking. The mixture becomes almost solid, and then, as the temperature rises, it gradually liquefies and turns deep yellow in color ([Note 2](#)). As soon as the material has liquefied completely the flask is transferred to a steam bath and heated for two hours. During this time a part of the product separates as deep yellow crystals. At the end of the heating 400 cc. of [alcohol](#) is added slowly to the contents of the flask. During this addition the flask is cooled slightly to moderate the vigor of the reaction. After allowing the reaction mixture to stand overnight, the yellow crystalline product is filtered with suction and washed on the filter with two 100-cc. portions of ice-cold [alcohol](#) and finally with two 100-cc. portions of boiling water. After drying, the product weighs 205–215 g. (69–73 per cent of the theoretical amount) and melts at 149–150°. This material is sufficiently pure for many purposes; it can be purified further by crystallization from hot [benzene](#). In this way, using 1.2 l. of [benzene](#), there is obtained 180–190 g. of the pure azlactone, melting at 151–152°.

2. Notes

1. The [veratraldehyde](#) obtained by methylating [vanillin](#) ([p. 619](#)) may be used without further purification.
2. The mixture should become completely liquid at a temperature of about 110°. Overheating should be avoided, since this causes the product to become red instead of bright yellow.

3. Discussion

The azlactones of α -benzoylaminocinnamic acids have always been prepared by the action of [hippuric acid](#) and [acetic anhydride](#) upon aromatic aldehydes,¹ usually in the presence of [sodium acetate](#).² The procedure given here is essentially that of Kropp and Decker.³

This preparation is referenced from:

- [Org. Syn. Coll. Vol. 2, 333](#)
- [Org. Syn. Coll. Vol. 2, 489](#)

1. Plöchl, Ber. **16**, 2815 (1883).
 2. Erlenmeyer, Ann. **275**, 3 (1893).
 3. Kropp and Decker, Ber. **42**, 1184 (1909).
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Appendix
Chemical Abstracts Nomenclature (Collective Index Number);
(Registry Number)

AZLACTONE OF α -BENZOYLAMINO- β -(3,4-DIMETHOXYPHENYL)-ACRYLIC ACID

5(4)-Oxazolone, 2-phenyl-4-veratral-
azlactones of α -benzoylaminocinnamic acids

[alcohol \(64-17-5\)](#)

[Benzene \(71-43-2\)](#)

[acetic anhydride \(108-24-7\)](#)

[sodium acetate \(127-09-3\)](#)

[Hippuric acid \(495-69-2\)](#)

[Veratraldehyde \(120-14-9\)](#)

[vanillin \(121-33-5\)](#)