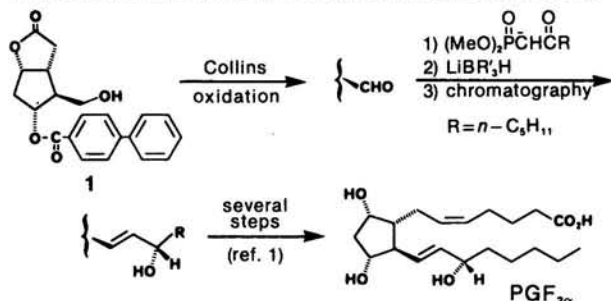




A Corey Lactone

The masterful design and first synthesis¹ of the "Corey lactones" are milestones in the construction of prostaglandins and thromboxanes.²

Aldrich takes pride in being able to offer the crystalline Corey lactone **1**, having the naturally occurring *absolute* stereochemistry at all four contiguous asymmetric centers.



The stable *p*-phenylbenzoyl derivative has advantages over other esters in that it produces crystalline intermediates which can be readily purified and characterized.³

In addition to Professor Corey's first application of **1** (depicted in the scheme),³ this key synthon has figured in the preparation of a wide variety of other prostaglandins and analogs.⁴

References:

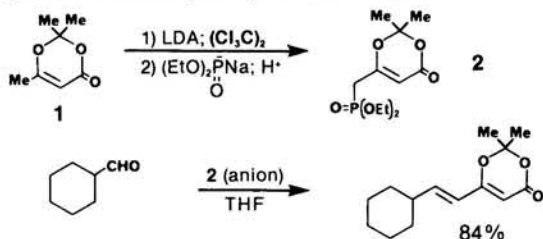
- 1) Corey, E.J.; Weinschenker, N.M.; Schaaf, T.K.; Huber, W. *J. Am. Chem. Soc.* **1969**, *91*, 5675.
- 2) See, for example: Mitra, A. "The Synthesis of Prostaglandins"; John Wiley & Sons, Inc.: New York, 1977.
- 3) Corey, E.J.; Albonico, S.M.; Koelliker, U.; Schaaf, T.K.; Varma, R.K. *J. Am. Chem. Soc.* **1971**, *93*, 1491.
- 4) Examples include: Bowler, J.; Clarkson, R. Ger. Offen. 2 213 907, 1972; *Chem. Abstr.* **1973**, *78*, 15636w. Beck, G.; Kunstmann, R.; Babej, M.; Teufel, H. Ger. Offen. 2 416 193, 1975; *Chem. Abstr.* **1976**, *84*, 135175r. Szekely, I.; Kovacs, G.; Virag, S.; Szentivanyi, M. Hung. Teljes 16 810, 1979; *Chem. Abstr.* **1980**, *92*, 128471w.

24,926-2 Corey lactone, *p*-phenylbenzoate alcohol
 [(3 α ,4 α ,5 β ,6 α)-(-)-[1,1'-biphenyl]-4-carboxylic acid, hexahydro-4-(hydroxymethyl)-2-oxo-2H-cyclopenta[b]furan-5-yl ester] [α]_D²⁰ -84° (c = 1, CHCl₃)

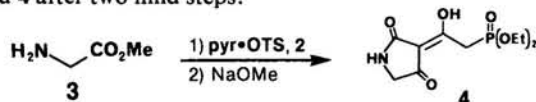
250mg \$12.00; 1g \$40.00

Diketene-Acetone Adduct (2,2,6-Trimethyl-1,3-dioxen-4-one)

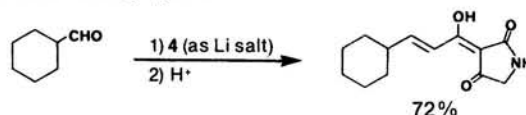
Nearly 30 years ago, the adduct derived from diketene and acetone, **1**, was shown to function as a convenient replacement for diketene in various reactions.¹ Recently, this interesting heterocycle has re-emerged as the precursor to a novel phosphonate β -keto ester synthon, **2**. Easily prepared from **1**, the anion of phosphonate **2** reacts with a variety of aldehydes to afford the expected Nazarov-type reagents in excellent yields, as shown below.



Even more impressive is the ease with which **2** reacts with α -amino esters to form 3-acetyltetramic acids activated toward olefin formation at the acetyl methyl group. Thus, glycine methyl ester (**3**) affords the corresponding tetramic acid **4** after two mild steps:



As expected, the anion of **4** (or similar acids) reacts with carbonyl compounds to afford the enoyl tetramic acid derivatives in high yield:



The above conversions are mild enough that acid- and heat-sensitive molecules have been constructed.

The potential utility of **1** in organic synthesis employing modern methodology is just beginning to be appreciated. The acidity of the vinyl methyl protons coupled with the latent β -keto ester function should stimulate other chemists to follow Professor Boeckman's fine start in developing adduct **1** as a useful natural product synthon.

References:

- 1) Carroll, M.F.; Bader, A.R. *J. Am. Chem. Soc.* **1953**, *75*, 5400.
- 2) Boeckman, Jr., R.K.; Thomas, A.J. *J. Org. Chem.* **1982**, *47*, 2823.

24,510-0 2,2,6-Trimethyl-1,3-dioxen-4-one
 (diketene-acetone adduct) 100g \$15.00
18,544-2 Hexachloroethane 100g \$7.60; 500g \$22.50
D9,923-4 Diethyl phosphite 250g \$6.25; 1kg \$21.90
23,223-8 Pyridinium 4-toluenesulfonate 25g \$17.30
 100g \$63.30



chemists helping chemists in research & industry

aldrich chemical co.

P.O. Box 355, Milwaukee, Wisconsin 53201 • (414) 273-3850