benzofuran derivatives

R 0070 11 - 154 An Efficient Butenolide Annulation via α -Chloroacetoxylation of Enones Using Manganese(III) Acetate and Chloroacetic Acid.

The fused butenolides (VI) are prepared in three steps from the substituted cyclohexenones (I). After chloroacetylation, an Arbuzov reaction yields the phosphonates (V), which undergo intramolecular Horner-Emmons reaction upon treatment with sodium hydride (2 further examples). — (DEMIR, A. S.; AKGUEN, H.; TANYELI, C.; SAYRAC, T.; WATT, D. S.; Synthesis (1991) 9, 719-721; Dep. Chem., Middle East Technical Univ., 06531 Ankara, Turkey; EN)

I III

a R^1 : -Me; R^2 , R^3 : -H; R^4 , R^5 : -Meb R^1 : -H; R^2 , R^3 : -Me; R^4 , R^5 : -Hc R^1 : -H; R^2 $-R^3$: $-(CH_2)_5$ $-(R^4, R^5)$: -H74%

d
$$R^1 - R^2$$
: $(CH_2)_4$ —; R^3 : -Me; R^4 , R^5 :-H

III
$$\frac{6 \text{ equiv. P(0-Et)}_3 \text{ (IV)}}{\text{reflux,[1-2 h]}} R^{1} R^{2} R^{3} R^{4}$$
 reflux,[1-2 h]
$$R^{1} R^{2} R^{3} R^{4}$$

V	VI
a 75%	68%
b 62%	72%
≎ 62%	74%
d 61%	66%