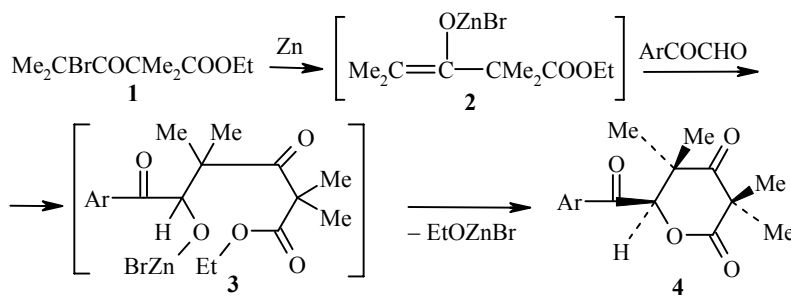


**SYNTHESIS OF 6-AROYL-
3,3,5,5-TETRAMETHYL-
2,3,5,6-TETRAHYDROPYRAN-
2,4-DIONES BY THE
REFORMATSKY REACTION**

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No data are available in the literature on substituted 2,3,5,6-tetrahydropyran-2,4-diones containing an acyl group in the 6 position of the pyran ring [1]. The first representatives of this type of compounds, 6-aryl-3,3,5,5-tetramethyl-2,3,5,6-tetrahydropyran-2,4-diones, were obtained by the Reformatsky reaction according to the scheme:



4 a Ar = Ph, **b** Ar = 4-MeC₆H₄, **c** Ar = 4-ClC₆H₄

In the first step, from the ethyl ester of 4-bromo-2,2,4-trimethyl-3-oxopentanoic acid (**1**) and zinc (ether–ethylacetate, 3:1), we obtain the zinc enolate **2**, which then was reacted with arylglyoxals. As a result of selective reaction of reagent **2** with the aldehyde group of the arylglyoxal, initially the alcoholate **3** was formed, which spontaneously underwent ring closure, yielding the target products **4a-c**.

6-Benzoyl-3,3,5,5-tetramethyl-2,3,5,6-tetrahydropyran-2,4-dione (4a). Yield 80%; mp 92-93°C. IR spectrum, ν , cm⁻¹: 1600, 1680, 1720, 1755. ¹H NMR spectrum (500 MHz, DMSO-d₆), δ , ppm: 0.83 (3H, s, CH₃); 1.39 (3H, s, CH₃); 1.45 (3H, s, CH₃); 1.50 (3H, s, CH₃); 6.19 (1H, s, –CH–O–); 7.58 (2H, t, C₆H₅); 7.75 (1H, t, C₆H₅); 8.13 (2H, d, C₆H₅). Found, %: C 70.16; H 6.49. C₁₆H₁₈O₄. Calculated, %: C 70.07; H 6.57.

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6-(4-Methylbenzoyl)-3,3,5,5-tetramethyl-2,3,5,6-tetrahydropyran-2,4-dione (4b). Yield 84%; mp 124-125°C. IR spectrum, ν , cm^{-1} : 1615, 1690, 1720, 1755. ^1H NMR spectrum (60 MHz, CDCl_3), δ , ppm: 0.95 (3H, s, CH_3); 1.38 (3H, s, CH_3); 1.45 (3H, s, CH_3); 1.58 (3H, s, CH_3); 2.33 (3H, s, $\text{CH}_3\text{C}_6\text{H}_4$); 5.53 (1H, s, $-\text{CH}-\text{O}-$); 7.23 (2H, d, C_6H_4); 7.80 (2H, d, C_6H_4). Found, %: C 70.91; H 6.75. $\text{C}_{17}\text{H}_{20}\text{O}_4$. Calculated, %: C 70.83; H 6.94.

6-(4-Chlorobenzoyl)-3,3,5,5-tetramethyl-2,3,5,6-tetrahydropyran-2,4-dione (4c). Yield 86%; mp 125-126°C. IR spectrum, ν , cm^{-1} : 1595, 1690, 1720, 1765. ^1H NMR spectrum (60 MHz, CDCl_3), δ , ppm: 0.97 (3H, s, CH_3); 1.37 (3H, s, CH_3); 1.43 (3H, s, CH_3); 1.58 (3H, s, CH_3); 5.50 (1H, s, $-\text{CH}-\text{O}-$); 7.40 (2H, d, C_6H_4); 7.87 (2H, d, C_6H_4). Found, %: C 62.30; H 5.46. $\text{C}_{16}\text{H}_{17}\text{ClO}_4$. Calculated, %: C 62.24; H 5.51.

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