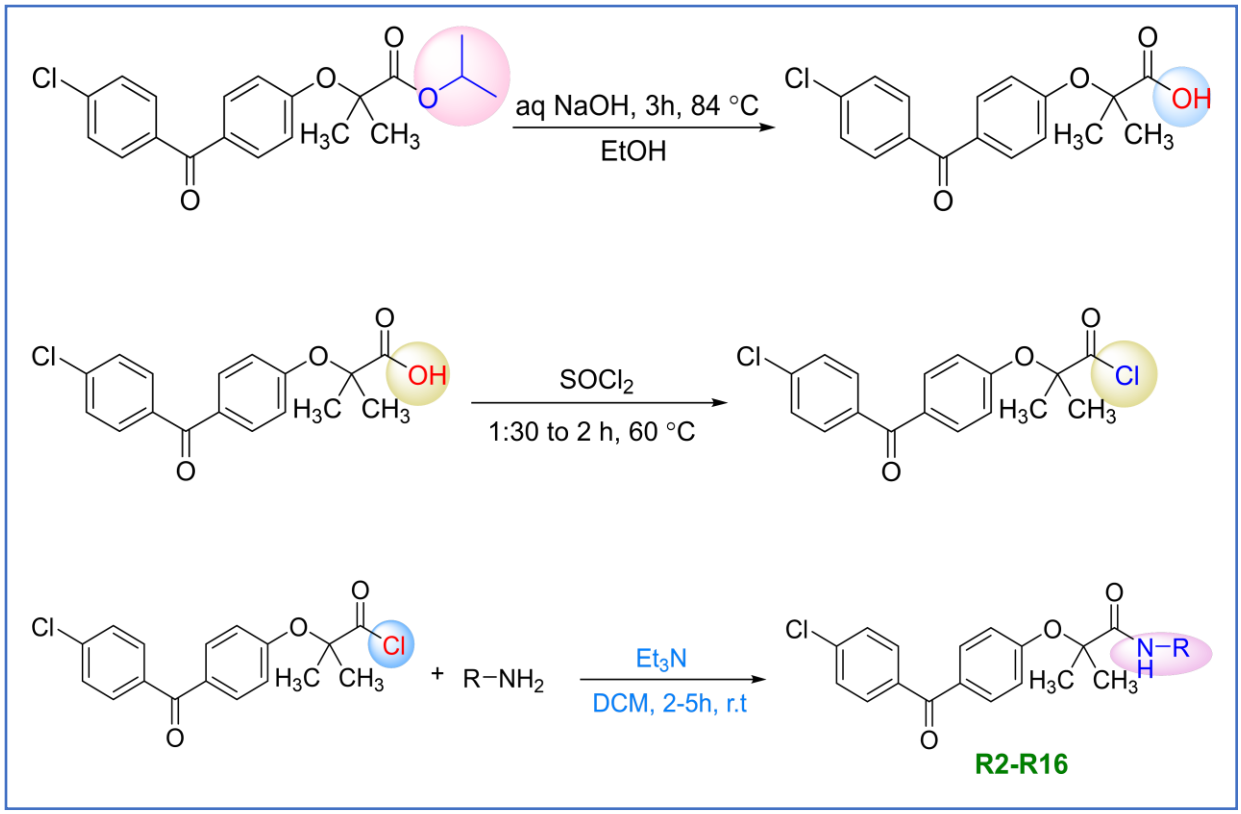
Summary

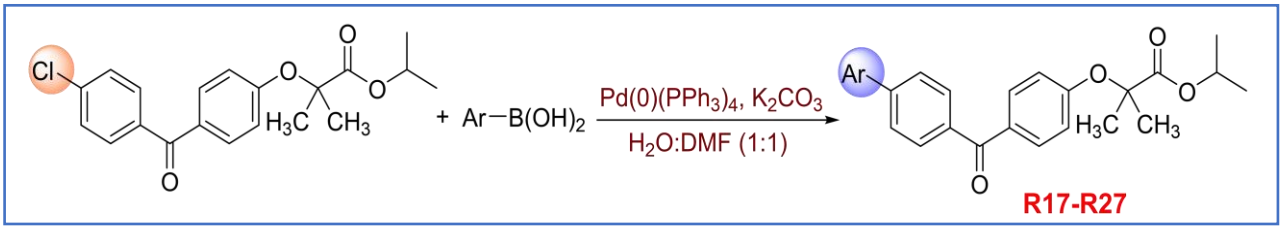
The present study describes the synthesis of some new fenofibrate derivatives. This work includes two lines:

First route: This involves hydrolysis of ester (fenofibrate) in an alkaline medium to prepare fenofibric acid. After that, converting the carboxylic group in the fenofibric acid into an acid chloride group by reacting with $SOCl_2$, and then the reaction with amine derivatives containing sulfa drug scaffolds and other types of amines gives amide derivatives (R2-R16), as shown in **Scheme (1)**



Scheme (1)

Second route: This involves the Synthesis of new biaryl derivatives (R17-R27) from the reaction between fenofibrate and aryl boronic acid derivatives, K_2CO_3 as a base, Pd (0) $(PPh_3)_4$ as catalytic and DMF: H_2O (5:5) as a reaction medium using Suzuki coupling reaction and microwave-assisted, as shown in **Scheme (2)**



Scheme (2)

The synthesized compounds were characterized by using some spectroscopic methods (FT-IR), (^{1}H-NMR), (^{13}C-NMR), and (2D-NMR) in addition to the CHNS analysis elements. As well as the study of derivatives' ability to couple with the protein of cancerous cells to undermine their growth by simulating the process using one of the molecular docking programs (MOE 2015) to find out their effectiveness as an anticancer and to pave the way for a laboratory study as well as antibacterial activity. The efficacy of derivatives as anticancer and pathogen-negative bacteria was studied in vitro, and the results showed good efficacy. On the other hand, antioxidants have been studied and showed good activity.