

## Synthesis and evaluation of some new chalcones and their pyrazoline derivatives as anticancer agents

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**ABSTRACT** Herein, we report the design, synthesis, and anticancer properties of chalcones and their heterocyclic derivatives, pyrazolines. The syntheses were carried out by applying the Claisen-Schmidt reactions of benzo[1,3]dioxole-5-carbaldehyde with different and aryl methyl ketones followed by condensation of these chalcones with hydrazine hydrate in solvent system ethanol and acetic acid. The cytotoxicity of these synthesized compounds was assessed against the three human tumor cells *viz.* breast cancer (MCF-7), liver cancer (HepG2), and colon cancer (HCT-116) cell lines using Sulforhodamine B assay. The antitumor evaluation showed that compound **3e** exhibited the highest activity among the tested series, with  $IC_{50}$  values in the range of 18.6–143.7  $\mu$ M, as compared to the standard drug doxorubicin. The results from the biological evaluations and *in silico* molecular docking analyses confirmed that chalcones could serve as a promising scaffold for the design of potential lead compounds with antitumor properties.

**KEYWORDS** Chalcone, Pyrazoline, Anticancer, Sulforhodamine B assay.

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