



Synthesis, characterization and evaluation of *in vitro* anticancer potential of novel fluorinated 5-benzylidene-3-ethyl-2-(2-methyl-3-trifluoromethyl-phenylimino)-thiazolidin-4-one derivatives: Comparison of reflux and ultrasonic conditions for Knoevenagel reaction

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A set of novel 5-benzylidene-3-ethyl-2-(2-methyl-3-trifluoromethyl-phenylimino)-thiazolidin-4-one derivatives have been synthesized by Knoevenagel reaction *via* both conventional as well as non-conventional methods on the synthesized iminothiazolidinone core. In terms of yield and reaction time, the ultrasound mediated Knoevenagel reaction method has proved to be more effective than the conventional approach using heat. The ¹H NMR spectra have been used to deduce the structure of the compounds, while LC-MS, FTIR, and elemental analysis data have also been utilized for better confirmation. Using a 2D NOESY NMR experiment, the stereochemistry of the final compound has been verified. The synthesized benzylidene compounds have been screened for *in vitro* anticancer potential against Human Hepatoma (Hep-G2) cell line. The compound having *p*-substituted methoxy group on benzylidene moiety is observed to be the most active against the tested cell line as compared to the rest of the compounds.

Keywords: Fluorine, Thiazolidin-4-one, Knoevenagel reaction, Ultrasonic waves, Anticancer activity, Hep-G2 cell line