# Curcuminoids in Multi-Component Synthesis and Their Biological Activities

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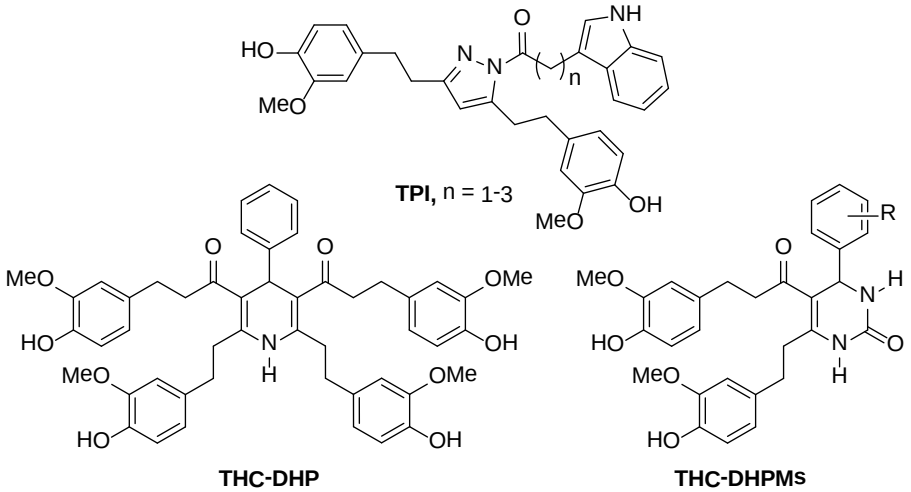
Three novel tetrahydrocurcumin (**THC**) analogues, tetrahydrocurcumin pyrazole indole (**TPI**), tetrahydrocurcumin-dihydropyridine (**THC-DHP**) and tetrahydrocurcumin-dihydropyrimidinone (**THC-DHPM**), have been successfully synthesized by direct condensation, multi-component Hantzsch and Biginelli reactions, respectively. Conceptually, the 1,3-dicarbonyl moiety of **THC** can be applied in these cyclocondensation reactions in the presence of either a Lewis acid such as copper sulphate or Brønsted acid such as *p*-toluenesulfonic acid, or glacial acetic acid. The idea is to incorporate the heterocyclic unit into **THC** generating a new generation of more powerful hybrid therapeutic molecules. The evaluation of bioactivities of such synthesized compounds revealed the anticipated results as their inhibitory values are much higher than that of its parental **THC**: **TPI** and **THC-DHP** showed cytotoxic activity against some human cancer cell lines, while **THBDC-DHPM** exhibited strong inhibitory activity against acetylcholinesterase and was notably more active than the approved drug galanthamine.

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