Novel second generation ferrocenyl chalcone derivatives as potential anticancer and antimalarial candidates

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The Chalcone framework has exhibited a wide range of biological activity and pharmacological applications. Chalcones bearing a Heterocyclic substituent have been systematically investigated for their antitumor properties. According to the literature, aromatic heterocyclic, moieties are particularity important because they could lock the molecule into a specific space orientation, a factor that is considered crucial for biological activity. The combination of heterocycle containing ferrocene derivative within the chalcone framework opens a broad new pathway to compounds with potential biological activity. The incorporation of ferrocene can result in a change of the biological properties, often associated with decrease in toxicity and increase in activity. Furthermore, heterocycles substituted with an amino group could permit further functionalization of the chalcones scaffold. This could lead to the synthesis of a second generation of ferrocenyl chalcones that include multiple functional groups. Our hypothesis is that these new ferrocenyl chalcones will produce a number of lead candidates seeking enhanced biological activity.

This research is focused on three specific aims:
(a) Develop an efficient methodology for the synthesis of second generation ferrocenyl chalcones containing heterocyclic and secondary amines moieties
(b) Perform spectral characterization of the new chalcones.
(c) Perform collaborative-based biological testing for cancer and malaria.