6-gingerol derivatives and thymoquinone-protoflavones hybrids: natural antioxidants as building blocks of new bioactive compounds

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Ginger (Zingiber officinale Roscoe) has been well known as a spice and in traditional medicine [1]. Ginger extract has been investigated for many diseases and the activity was mainly attributed to gingerols and shogaols, the most abundant antioxidants in ginger root [2,3]. Black seed (Nigella sativa L.) has been widely used as a seasoning spice and in folk medicine [4]. A wide array of bioactivities was reported for the extract and for thymoquinone, a predominant active constituent in the plant [5].

Fourteen 6-gingerol derivatives were semi-synthesized, 8 of which are new. They were investigated for their in vitro antiplatelet activity and in silico ADME behavior. The most promising compound showed an IC$_{50}$ of 2.1 µM. Eight thymoquinone-protoflavone hybrids were also synthesized and will soon be studied for their in vitro antitumor activity.

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References