Month 2018 Synthesis and In Vitro Anticancer Evaluation of Symmetrically Bridged 1, 3-thiazine Derivatives

Abstract

Over decades, extensive efforts have been devoted toward developing new treatments for cancer as it counts as one of the most leading causes of mortality worldwide [1–3]. Although great advances in cancer research have already been achieved, the continued attempts of discovering new therapeutics for anticancer are still critically required. Combination treatments, including radio and chemotherapy, showed satisfactory victory over the disease, however, these were associated in many cases with serious side effects on the patient. On the other hand, the discovery of drugs that can target only cancer cells without affecting the normal ones is still believed to be a real challenge. A recent report by the World Health Organization recorded 8.8 million deaths with cancer-related diseases, only in 2015 [4]. Cases with cancers are estimated to increase at an alarming rate over the next few decades [5]. Therefore, there is an urgent demand to develop and discover novel anticancer agents with a broader spectrum of cytotoxicity that can be effective toward different types of cancer cell lines. Heterocyclic architectures, which contain sulfur and nitrogen elements, were reported to exhibit wide range of pharmacological activities [6–11]. In particular, the 1, 3-thiazines have been given considerable interest in pharmaceutical research as anti-inflammatory [12], antitumor [13], antibacterial [14], and antiviral agents [15]. However, only a few studies exploring their anticancer potential have been reported [13, 16–22]. Moreover, in recent years, attention has been increasingly paid to the synthesis of bis-heterocyclic compounds, which exhibit various biological …