SYNTHESIS AND BIOLOGICAL SCREENING OF DI-INDOLYLMETHANES DERIVATIVES

Abstract

Di-indolylmethane (DIM) is a natural compound that is formed in the body during the digestion of certain vegetables, particularly those of Brassicaceae family. This family includes cruciferous vegetables like broccoli, cabbage, brussels sprouts, and cauliflower. DIM is derived from a substance called indole-3-carbinol which is found in these vegetables. Research have shown that DIM may have various potential health benefits, particularly in areas related to hormones balance, detoxification, and possibly even cancer prevention. They also show antimicrobial activity which is very close to the standard medications used so for as antimicrobial. They were firstly synthesized for the prevention and treatment of cancerous cells in the body. There are many synthetic routes for their synthesis which are easily achievable. It is described as an uncomplicated, one-step process for making 3,3′-diindolylmethanes (DIMs) from conventional indoles and ketones or aldehydes. The electrophilic substitution reaction of indoles with alkyl/aryl aldehydes and ketones accelerated by sulfuric acid supported on silica gel was discovered as a quick, easy, and effective way to make bis(indolyl)methanes (BIMs). Short reaction periods, excellent yields, simplicity of experimental procedure and product separation, favorable reaction conditions, and inexpensive cost are all benefits of the current approach. The procedures followed for diindolylmethanes synthesis in this context are very simple and are the easiest approach toward DIM. The traditional medications used now a days are expensive and some medications also shows some serious side effects like aspirin tablets have a side effect of ulcer etc. same is the case for the medications against antibacterial and antifungal, which also shows some undesirable effects. So, the synthesis of such novel medications which are very easy and simple to achieve and with negligible undesirable effects to be shown, this unique and novel medications are seriously the call of the day. In this context, the synthesized derivatives of DIM show a very noticeable antibacterial and antifungal activities against some gram-positive and gram-negative bacterium and also against fungal strain. Some of the synthesized derivatives of DIM shows an inhibitory zone of size 24.5mm, 24mm, 23.5mm, and 19mm against *P. merabilis, S. typhi, B. subtilis, and C. albicans* respectively, which are very close to the standard medications used nowadays. In the last, I have concluded from this research work that DIM has shown a very valuable and effective role against many microbes and it is also concluded that their synthesis was also very much simple, convenient and easy, so that to synthesize them for future and for further studies.