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Chemotherapy in the treatment of experimental visceral leishmaniasis caused by Leishmania donovani using chromenochalcones

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Visceral leishmaniasis (VL) is a chronic infection, caused by the protozoan parasite Leishmania donovani and L. infantum, transmitted through the bite of female phlebotomine sand flies. VL is endemic in more than 60 countries, around 59,000 deaths, with 200 million people at risk, 90% of the 500,000 cases per year happen in six countries: India, Bangladesh, Nepal, Sudan, Brazil and Ethiopia. All recommended treatments have several limitations including high toxicity, resistance issues, prohibitive prices, long treatment length or inadequate mode of administration. Moreover, there are no effective vaccines to prevent leishmaniasis. Therefore, the development of new antileishmanial agent with improved pharmacological properties is imperative.

Licochalcone A isolated from Chinese licorice roots efficiently inhibits proliferation of L. donovani and L. major promastigotes and amastigotes in vitro by inhibiting fumarate reductase, a selective target present in the parasite mitochondria. In continuation of our antileishmanial drug discovery program and based on our earlier findings, we synthesized the large number of chromenochalcones analogues using pyridine-catalyzed Claisen-Schmidt condensation reaction. All the 44 synthesized compounds were tested in vitro against intramacrophagic amastigotes of L. donovani. Amongst all, twenty two compounds displayed promising antiamastigote activity with IC_{50} ranging from 0.75 to7.66 µg/ml. Most of the compounds displayed better in vitro activity compared to the existing antileishmanials, sodium antimony gluconate (SAG) and miltefosine in respect to IC_{50} and selectivity indices (SI). Compound 7 identified as a most active analogue exhibited significant in vivo inhibition of 84.74% in L.donovani/ hamster model, and provided a new structural scaffold for novel antileishmanials.

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Assessment of antibacterial activity of some economically seaweeds from rameshwaram coastal areas of south India

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The different types of economically active seaweeds extract were used for antibacterial activity using four types of Bacterial strains. Out of four types of algal extracts, the methanolic extracts shown its maximum zone of inhibition against Pseudomonas aeruginosa measuring 14.7mm in Gracilaria corticata and minimum zone of inhibition 1.7mm in Sargassum wightii against Bacillus cereus, due to activity of bioactive compound. The order of activity decreases against some bacterial strains may due to resistant activity of bioactive compounds present in the extracts of seaweeds.

Keywords: Seaweeds, Antibacterial activity, Solvent extracts, Bacterial Strains.

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