ISOLATION AND CHARACTERIZATION OF LEAD PHARMCEUTICAL METABOLITES OF SOFT CORAL (ORDER ALCYONACEA)

SAGA CODE

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SYNOPSIS

Soft corals of the class Octocorallia (order Alcyonacea) are well known as prolific organisms and they are popular among researchers as one of the important natural resources as many valuable metabolites were isolated from this marine organism. This study is about isolation and characterization of lead pharmaceutical metabolites of four main genera of soft corals; *Sarcophyton, Lobophytum, Nephthea* and *Sinularia*. The samples were collected from the three main coastal waters of Sabah; 1) Tunku Abdul Rahman Marine Park, 2) Tun Mustapha Marine Park, and 3) Tun Sakaran Marine Park. All the collected samples were extracted and profiled using Thin Layer Chromatography (TLC) and High Performance Liquid Chromatography (HPLC). Fractions with interesting profile were further isolated and purified to get pure compounds. As a result, a total of 37 compounds of four chemical skeletons; cembranes, lobanes, sterols and germacrane were isolated. Isolated compounds were then subjected into bioassays including anti-microbial, cytotoxicity assay and photodynamic therapy assay. Most of cembranes and lobanes are active against *E. coli, Salmonella typhii, S. enteritidis, S.thphymunium, Staphalococcus aereus and Vibrio cholera*, at a concentration of 30 μg. Cembranes also showed cytotoxicity against P-388 murine leaukemia cells and showed interesting activity against HL60 promyelocytic leukemia cells (from ATCC) in the photodynamic therapy assay.

SINOPSIS

Karang lembut yang tergolong dalam kelas Octocorallia (order Alcyonacea) yang amat dikenali sebagai organisma yang produktif juga amat terkenal di kalangan penyelidik sebagai salah satu sumber hasilan semulajadi yang penting kerana banyak metabolit bernilai yang telah berjaya diasingkan daripada organisma marin ini. Kajian ini adalah berkaitan dengan pengasingan dan pencirian metabolit farmaseutikal yang utama dalam empat genera utama karang lembut; *Sarcophyton, Lobophytum, Nephthea* dan *Sinularia.* Sampel kajian telah dikutip dari tiga perairan pesisir utama di Sabah; 1) Taman Marin Tunku Abdul Rahman, 2) Taman Marin Tun Mustapha, dan 3) Taman Marin Tun Sakaran. Kesemua sampel telah diekstrak dan diprofil menggunakan Kromatografi Lapisan Nipis (TLC) dan Kromatografi Cair Kinerja Tinggi (HPLC). Pecahan ekstrak yang menunjukkan profil menarik telah diasing dan dibersihkan untuk mendapatkan sebatian metabolit yang asli. Hasilnya, sebanyak 37 sebatian metabolit asli yang terdiri daripada empat rangka kimia; 'cembranes', 'lobanes', 'sterols' dan 'germacrane' telah berjaya diasingkan daripada karang lembut yang dikaji. Sebatian metabolit yang diperoleh telah diuji dalam ujian bio-cerakinan meliputi ujian anti-mikrob, ujian sitotoksisiti dan ujian terapi fotodinamik. Hasil daripada ujian yang dijalankan, sebatian yang terdiri daripada 'cembrane' dan 'lobane' menunjukkan aktiviti menentang bakteria *E. coli, Salmonella typhii, S. enteritidis, S.thphymunium, Staphalococcus aereus and Vibrio cholera*, pada kepekatan 30 µg. 'Cembrane' juga aktif menentang sel leukemia P-388 murine dalam ujian sitotoksisiti dan sel leukemia HL60 promyelocytic (daripada ATCC) dalam ujian terapi fotodinamik.