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Assessment of the *in vitro* antibacterial and anticancer potential of crude extract and its sub-fractions prepared from *Helicteres hirsuta Lour*. leaves and stems

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Lelicteres hirsuta Lour. (H. hirsuta) is a member of Helicteres genus of the Sterculiaceae family. This plant is widely distributed $m \Pi$ in Southeast Asian countries and has been traditionally used as herbal medicine for the treatment of malaria and diabetes. However, there are limited studies on its biological properties. This study aimed to investigate the *in vitro* antibacterial and anticancer properties of the crude extract and its two sub-fractions. The crude extract was prepared from ultrasonic extraction (60 °C, 150 W for 25 min) of the dried leaf and stem in 40% methanol at a ratio of 3:100 (g/mL), and then freeze-dried to obtain the powder for further analysis. The two sub-fractions were prepared from the crude extract solution by first removing methanol, then subsequently separated using hexane and n-butanol to obtain the saponin-enriched and aqueous fractions, which were then freeze-dried for further analysis. Antibacterial activity was assessed using the disc diffusion method and measurement of MIC values. Anticancer properties against a panel of cancer cell lines in vitro were examined using MTT and CCK-8 assays. The results revealed that the saponin-enriched fractions from *H. hirsuta* leaves and stems showed the highest antibacterial activity against E. coli and S. lugdunensis. In addition, these saponin-enriched fractions displayed powerful anticancer activity in vitro on a range of cancer cell lines at low doses (GI₅₀ values of 0.36-11.17 µg/mL). Interestingly, these saponin-enriched fractions exhibited potent anti-cancer activity against two primary pancreatic cancer cell lines (MIA PaCa-2 and BxPC-3) and one secondary pancreatic cancer cell line (CFPAC-1). Therefore, these saponin-enriched fractions contain major saponin components, which poses antibacterial and anticancer properties and thus they should be identified and separated for further assessed for their potential as food components or therapeutic agents.

Biography

Hong Ngoc Thuy Pham is a Lecturer of Food Science at Nha Trang University, Vietnam. She has obtained her BSc in Food Technology in 2004 and MSc in Post-harvest Technology in 2009 from Nha Trang University, Vietnam. She is currently undertaking PhD program at the University of Newcastle, Australia. She has published numerous publications and she is interested in exploring bioactive compounds from plant materials for utilization in the food and pharmaceutical industries.

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