



# Faculty of Sciences & Faculty of Pharmacy

## The International Conference of the Faculty of Sciences & Faculty of Pharmacy at Mutah University

"The 1<sup>st</sup> International Conference for Science and Pharmacy"  
( MSPC1 )

October 26-28, 2022



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**"The 1<sup>st</sup> International Conference for Science and Pharmacy"**

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**Al-Karak, Jordan**

**October 26 – 28, 2022**

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## Biological and pharmaceutical potential of supercritical carbon-dioxide extracts of hops

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Pharmacologically active substances of natural origin attract a lot of attention both from scientists and industry. Biologically active compounds that can be isolated from nature have been used for centuries to treat many diseases, and with the development of science, their activity has been scientifically confirmed, while the mechanism of action has even been discovered for many of them. Although the first half of the 20th century was marked by a sudden increase in chemical synthesis, and a huge number of pharmacologically active components were obtained synthetically, at the end of the 20th and the beginning of the 21st century, natural bioactive compounds were rehabilitated. This is actually a consequence of the desire of consumers all over the world to use natural preparations and to turn to natural medicine. Precisely for this reason, the extraction of bioactive molecules from plants is of increasing importance both at the laboratory and at the industrial level. As part of this work, the extraction of bioactive molecules from hops was carried out by the process of extraction with supercritical carbon dioxide. Biological activity of extracts was determined by a series of tests that confirmed their antioxidant, antimicrobial and cytotoxic potential. The antioxidant activity was determined using 5 different tests (determination of ability to neutralize DPPH, ABTS, OH radicals, to inhibit lipid peroxidation, as well as total antioxidant activity). Cytotoxic activity was determined on a panel of 4 different cell lines: Hep2c cells, RD cells, L2OB cells, L929 cells. Antimicrobial potential was determined against 8 different microbiological strains, namely bacteria and yeasts. The obtained results showed that all the extracts have an extremely high level of biological activity, but the difference between the extracts was pronounced, which is a consequence of the extraction conditions during the extraction process itself. However, each of the extracts possess the potential to be incorporated into myriad functional products or supplements intended to improve health.

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