Antiprotozoal Nor-triterpene alkaloids from Buxus sempervirens L

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4646088
Author(s) Szabó, L. U.; Kaiser, M.; Mäser, P.; Schmidt, T. J.
Author(s) at UniBasel Mäser, Pascal ; Kaiser, Marcel ;
Year 2021
Title Antiprotozoal Nor-triterpene alkaloids from Buxus sempervirens L
Journal Antibiotics (Basel)
Volume 10
Number 6
Pages / **Article-Number** 696
Keywords Buxus sempervirens L.; antiprotozoal activity; natural product isolation; nor-cycloartane alkaloids; structure elucidation

Malaria and human African trypanosomiasis (HAT; sleeping sickness) are life-threatening tropical diseases caused by protozoan parasites. Due to limited therapeutic options, there is a compelling need for new antiprotozoal agents. In a previous study, O-tigloylcyclovirobuxeine-B was recovered from a B. sempervirens L. (common box; Buxaceae) leaf extract by bioactivity-guided isolation. This nor-cycloartane alkaloid was identified as possessing strong and selective in vitro activity against the causative agent of malaria tropica, Plasmodium falciparum (Pf). The purpose of this study is the isolation of additional alkaloids from B. sempervirens L. to search for further related compounds with strong antiprotozoal activity. In conclusion, 25 alkaloids were obtained from B. sempervirens L., including eight new natural products and one compound first described for this plant. The structure elucidation was accomplished by UHPLC/+ESI-QqTOF-MS/MS and NMR spectroscopy. The isolated alkaloids were tested against Pf and Trypanosoma brucei rhodesiense (Tbr), the causative agent of East African sleeping sickness. To assess their selectivity, cytotoxicity against mammalian cells (L6 cell line) was tested as well. Several of the compounds displayed promising in vitro activity against the pathogens in a sub-micromolar range with concurrent high selectivity indices (SI). Consequently, various alkaloids from B. sempervirens L. have the potential to serve as a novel antiprotozoal lead structure.

ISSN/ISBN 2079-6382 (Print)2079-6382 (Linking)
URL https://doi.org/10.3390/antibiotics10060696
edoc-URL https://edoc.unibas.ch/89540/
Full Text on edoc Available;
Digital Object Identifier DOI 10.3390/antibiotics10060696
PubMed ID http://www.ncbi.nlm.nih.gov/pubmed/34200688
ISI-Number WOS:000665414000001
Document type (ISI) Journal Article