

Transnational Access Report

1. General Information

Project Acronym (ID):	Algae and UV
Project Title	Abiotic stress in extremophiles-strategies and utilization
Installation used	Expositionskammer
Name of Group Leader	Professor Dr. Markus Ganzera
Name of organization	Universität Innsbruck, Pharmakognosie
E-mail address	markus.ganzera@uibk.ac.at
Telephone	43 (0)512 507 58406,

2. Duration of access

Duration of the access refers to the use of the installation only and does not include the preparation of the experiment or data analysis.

Begin of the project First day the installation was used	End of the project Last day the installation was used
25.11.2013	06.12.2013

3. Project summary (max. 250 words)

Algae from high mountain source were chosen for bio-guided isolation of UV absorbing components. 20 different species were bought from 4 different laboratories and cultivated. These species have not been investigated before in detail. After extraction of the dried algal material with different organic solvents an antioxidative ORAC assay revealed the most active species. Those were grown in larger amount and chosen for bio-guided isolation. Sun simulation experiments should help to clarify the mode of different protection strategies in those species. Purified extracts and also isolated compounds should be tested in different bio assays, also including a cell based assay on human skin cells (HACaT-Cells).

4. Main achievements (max. 250 words)

Irradiated algae material was extracted with 3 different solvents (water, methanol, dichloromethane) varying from high to low polarity. All extracts were analyzed via HPLC. Dichloromethane extracts showed no changes between irradiated and non-irradiated samples. The biggest changes in peak height could be obtained in the water extracts showing much higher peaks for some very polar components when irradiated with both UVA and UV-B light. These molecules had not been described as sun-screen molecules in literature in order to clarify the structure those substances were isolated from the irradiated material, which was challenging due to low quantities of plant material. However structure elucidation via NMR revealed nucleosides and amino acids as target analyses. Quantification in the samples is presently carried out on the irradiated material. Further investigations on human skin cells (HACaT-Cells) will clarify the mode of action of these molecules on their protection strategies.