

IAA/IAF SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Biology in Space (7)

Author: Prof. Marlise dos Santos  
PUCRS, Brazil, marlise.santos@pucrs.br

Ms. Carla Paludo  
PUCRS, Brazil, carlasignor@hotmail.com

Prof. Thais Russomano  
Microgravity Centre, Brazil, trussomano@hotmail.com

Ms. Flávia Nathiely Silveira Fachel

Brazil, flavia\_fachel@hotmail.com

Prof. Yashwant Pathak

USF, United States, ypathak1@health.usf.edu

Prof. Eduardo Cassel

PUCRS, Brazil, cassel@pucrs.br

Dr. Aline Lucas

PUCRS, Brazil, alinelucas337@hotmail.com

GROWTH AND PRODUCTION OF SECONDARY METABOLITES OF ERUCA SATIVA MILL

**Abstract**

*Eruca sativa* Mill. (Arugula) belongs to the Brassicaceae family and is widely used in cooking in many countries. When used in therapeutic treatment, it has been shown to demonstrate antioxidant, anticarcinogenic, antimicrobial and antifungal activity. This activity has been attributed to their secondary metabolites, glucosinolates, and their hydrolysis products, isothiocyanates. These characteristics prompted an evaluation of the effect of simulated hypergravity on this species, since this condition has already demonstrated morphological and physiological changes in several plant species, such as increased growth and modification of intracellular components. In this study, the condition of simulated hypergravity was accomplished through application of a centrifugal acceleration to +7 Gz. The results demonstrated no significant difference in germination, growth and phenolic compound production between the arugula control and centrifugal groups. The composition and distribution of essential oil differed between the two groups, however, both the oils presented antifungal activity for *Aspergillus niger*. The major component of the essential oil of the centrifugal group was 1-isothiocyanato butane. This component was not found in the control group, suggesting that simulated hypergravity can be used to increase production of secondary metabolites of pharmaceutical interest.