May 20th, 12:30 PM

The Effects of Rhodiola Crenulata Extract on Proliferation and Differentiation in Glioblastoma Multiforme

Maria Carmen Mora  
*Tufts University School of Medicine*

Kaitlyn Wong  
*Tufts University School of Medicine*

Michael Tirabassi  
*Tufts University School of Medicine*

See next page for additional authors

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Mora, Maria Carmen; Wong, Kaitlyn; Tirabassi, Michael; Arenas, Richard; and Schneider, Sallie S., “The Effects of Rhodiola Crenulata Extract on Proliferation and Differentiation in Glioblastoma Multiforme” (2014). *UMass Center for Clinical and Translational Science Research Retreat*. 71.

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Presenter Information
Maria Carmen Mora, Kaitlyn Wong, Michael Tirabassi, Richard Arenas, and Sallie S. Schneider

Comments
Abstract of poster presented at the 2014 UMass Center for Clinical and Translational Science Research Retreat, held on May 20, 2014 at the University of Massachusetts Medical School, Worcester, Mass.

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The Effects of *Rhodiola Crenulata* extract on Proliferation and Differentiation in Glioblastoma Multiforme

Maria Carmen Mora, M.D. 2,3, Kaitlyn Wong, M.D., M.P.H. 2,3, Michael Tirabassi, M.D. 1, Richard Arenas, M.D.2,3,4, Sallie Schneider, Ph.D.3,4

1. Baystate Children’s Hospital, Tufts University School of Medicine, Springfield, MA 01199
2. Baystate Medical Center, Tufts University School of Medicine, Springfield, MA 01199
3. Pioneer Valley Life Sciences Institute, Springfield, MA 01199
4. University of Massachusetts Amherst, Amherst, MA

ABSTRACT

Purpose:
Purpose of the study was to evaluate the effects of *rhodiola crenulata* plant extract on glioblastoma in vitro.

Methods:
U-87MG glioblastoma multiforme cell line was utilized for evaluation in this study. Cells were treated with 100ug/ml or 200ug/ml of *rhodiola crenulata* and compared to ethanol vehicle control. Proliferation was measured at 24, 48, 72, and 96 hours after treatment utilizing an MTS proliferation assay. To further assess proliferation a clonogenicity assay was conducted. These cells were treated with ethanol vehicle control, 100ug/ml of rhodiola, radiation, or combined rhodiola/radiation treatment. To evaluate differentiation the expression of glial fibrillary acidic protein (GFAP), a protein marker of differentiation, was assessed with immunocytochemistry.

Results:
Effects on proliferation were initially noted at 48 hours after treatment and observed through the 96-hour period. The effects on proliferation were noted in both treatment groups. At 96-hours after treatment significant difference was noted between the 100ug/ml of rhodiola and control group (p=0.0065) and significant difference noted between the 200ug/ml of rhodiola and control group (p=0.0006). Cell clonogenicity was reduced in the cells treated with 100ug/ml of rhodiola. The decreased number of colonies was significant when comparing the radiation treated cells with 100ug/ml rhodiola treated cells (p=0.0030). GFAP was overexpressed in the rhodiola treatment group when compared to expression in the control group (Figure 1).

Conclusion:
*Rhodiola crenulata* extract effectively decreases proliferation and increases differentiation of glioblastoma cells in vitro. Further work is required to fully understand the extent and full effects *rhodiola crenulata* has glioblastoma cells.

Figure 1: A. Rhodiola treated cells  B. Ethanol Control Group