

SENSITIVITY SCREENING OF RADISH SEEDLINGS TO SPACECRAFT VOCs

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The effect of 5 days of chronic exposure of (*Raphanus sativus* L., cv. Cherry Bomb Hybrid II) to ethanol, methanol, tert-butyl alcohol and isopropyl alcohol was studied at 0, 10% and 100% of the SMAC concentration for each compound. The SMAC values are 1000 ppm, 6.7 ppm, 39.6 ppm, 61 ppm, and 15.7 ppm, respectively. Ethanol at 10% of SMAC reduced seedling growth by 30% and exposure to 50% SMAC was lethal. A slight reduction (10%) in growth was observed at 100% SMAC for isopropyl alcohol, methanol and tert-butyl alcohol. There were no obvious effects on seedling growth at 100% SMAC concentration for methanol. Exposure of seedlings to 0, 100, and 500 ppm of ethanol, isopropyl, tert-butyl alcohol, and methanol for 5 days was conducted. Radish seeds did not germinate in the presence of 500 ppm of ethanol, tert-butyl alcohol and isopropyl alcohol. Ethanol inhibited seed germination and seedling growth at 100 ppm treatment. Methanol was not as bioactive, but seedling growth was slower at 100 and 500 ppm. The seedling bioassay provides a rapid screening tool to identifying compounds of concern during long duration space missions.