Nutrient considerations for Plants grown under Space Flight conditions.

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We present here results on the analysis of 100 mL medium samples extracted from sterilized foam (Smithers-Oasis, Kent OH) used to support the growth of both dicotyledonous (*Haplopappus gracilis*, n=75) and monocotyledonous (*Hemerocallis* cv Autumn Blaze, n=25) aseptic plants in NASA's Plant Growth Unit (PGU) during the 5-day CHROMEX-01 Space Shuttle flight (March 1989, STS-29). At recovery, the medium remaining within each of the five floral foam blocks (for both the space flight and ground control experiments) was extracted under vacuum, filtered and subjected to elemental analyses. Concentration levels of some elements remained the same, while some decreased and others increased. A unique aspect of this experiment was that all plants were either aseptic tissue culture generated plantlets or sterile seedling clones, and the design of the PGU facilitated the maintenance of asepsis throughout the mission (confirmed by post-flight microbial sampling). This permitted the elimination of microbial considerations in the interpretation of the data. The significance of these findings for growing plants in altered gravity environments are discussed.

Keywords: space flight, microgravity, *Haplopappus*, *Hemerocallis*, plant nutrition.