

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Interactive Presentations - IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (IPB)Author: Prof. LUISA GARCIA ROJAS VAZQUEZ
MexicoIMMUNO NUTRITION: CONTRAMEASURE AGAINST IMMUNE SYSTEM DYSREGULATION
DURING LONG-TERM SPACEFLIGHT. PROPOSAL.**Abstract**

Space radiation and microgravity are two major environmental stressors encountered simultaneously in long-term spaceflight, the combined effects of these space conditions on human cells produce additive or synergistic consequences to sustainability of human life and the maintenance of homeostasis in an extreme environment. Other studies data revealed that immune dysregulation, altered leukocyte distribution, altered cytokine profiles, and reduced cellular function persisted during a 6-month orbital space mission, in conjunction with elevated stress and inflammatory markers. A single specific nutrient can also exert multiple diverse immunological effects, such as in the case of vitamin E, C, D, A, Zinc, amino acids like glutamine and arginine, lipids omega-3, fibre and recently nutraceuticals, have potential to modulate the activity of the immune. That's why in clinical practice interventions supplementation of nutrients by is used to modify inflammatory or immune responses. Aim. Determinate if Immuno nutrition as a viable contrameasure against immune system dysregulation during long-term spaceflight. Methods. To identify immune dysregulation, other studies demonstrated efficacy when assessment leukocyte subset distribution through DNA methylation in order to detect and quantify the proportions of human T cells, B cells, natural killer (NK) cells, monocytes, basophils, eosinophils and neutrophils in any single blood sample, intracellular cytokine profiles analysed by flow cytometry following specific in vitro stimulation, the production of interferon (IFN)-gamma, Interleukin (IL)-2, IL-1alpha, IL-1beta, IL-8, tumour necrosis factor (TNF)-alpha and -beta, IL-4, IL-5, IL-6, IL-10 and IL-13. All measurements will be made before spaceflight to have a frame of reference. Later they will be carried out upon returning to earth and identifying the effectiveness and impact of nutritional supplementation with vitamins (E, C, D, A, Zinc), amino acids (glutamine and arginine), omega 3, and specific phytochemicals (Flavonoids, tannin, phenolic acids).