

<b>Fiscal Year:</b>	FY 2017	<b>Task Last Updated:</b>	FY 10/18/2016
<b>PI Name:</b>	Simons, Takiyah Ph.D.		
<b>Project Title:</b>	Food Fortification Stability Study		
<b>Division Name:</b>	Human Research		
<b>Program/Discipline:</b>			
<b>Program/Discipline--Element/Subdiscipline:</b>	HUMAN RESEARCH--Space Human Factors Engineering		
<b>Joint Agency Name:</b>	<b>TechPort:</b>	No	
<b>Human Research Program Elements:</b>	(1) <b>SHFH</b> :Space Human Factors & Habitability (archival in 2017)		
<b>Human Research Program Risks:</b>	None		
<b>Space Biology Element:</b>	None		
<b>Space Biology Cross-Element Discipline:</b>	None		
<b>Space Biology Special Category:</b>	None		
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<b>Zip Code:</b>	77058	<b>Congressional District:</b>	22
<b>Comments:</b>			
<b>Project Type:</b>	GROUND	<b>Solicitation / Funding Source:</b>	Directed Research
<b>Start Date:</b>	10/05/2014	<b>End Date:</b>	10/01/2016
<b>No. of Post Docs:</b>	<b>No. of PhD Degrees:</b> 2		
<b>No. of PhD Candidates:</b>	<b>No. of Master' Degrees:</b> 1		
<b>No. of Master's Candidates:</b>	<b>No. of Bachelor's Degrees:</b>		
<b>No. of Bachelor's Candidates:</b>	<b>Monitoring Center:</b> NASA JSC		
<b>Contact Monitor:</b>	Whitmore, Mihriban	<b>Contact Phone:</b>	281-244-1004
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<b>Flight Program:</b>			
<b>Flight Assignment:</b>	NOTE: End date changed to 10/01/2016 per E. Connell/JSC HRP (Ed., 7/11/16)		
<b>Key Personnel Changes/Previous PI:</b>	PI change in October 2014 to Takiyah Sirmons (previous PI=Maya Cooper).		
<b>COI Name (Institution):</b>	Douglas, Grace Ph.D. ( NASA Johnson Space Center ) Cooper, Maya M.S. ( Lockheed Martin/NASA Johnson Space Center )		
<b>Grant/Contract No.:</b>	Directed Research		
<b>Performance Goal No.:</b>			
<b>Performance Goal Text:</b>			
<b>Task Description:</b>	<p>NASA has established the goal of traveling beyond low-Earth orbit and extending manned exploration to Mars. The length of proposed Mars missions and the lack of resupply missions increases the importance of nutritional content in the food system, which will need a five year shelf life. The purpose of this research is to assess the stability of vitamin supplementation in traditionally processed spaceflight foods. It is expected that commercially available fortification nutrients will remain stable through a long duration exploration mission at sufficient levels if compatible formulation, processing, and storage temperatures are achieved.</p> <p>Five vitamins (vitamin E, vitamin K, pantothenic acid, folic acid, and thiamin) were blended into a vitamin premix (DSM, Freeport, TX) such that the vitamin concentration per serving equaled 25% of the recommended daily intake after two years of ambient storage. Four freeze-dried foods (Scrambled Eggs, Italian Vegetables, Potatoes Au Gratin,</p>		

	Noodles and Chicken) and four thermostabilized foods (Curry Sauce with Vegetables, Chicken Noodle Soup, Grilled Pork Chop, Rice with Butter) were produced, with and without the vitamin premix, to assess the impact of the added fortification on color and taste and to determine the stability of supplemental vitamins in spaceflight foods.
<b>Rationale for HRP Directed Research:</b>	This research is directed because it contains highly constrained research, which requires focused and constrained data gathering and analysis that is more appropriately obtained through a non-competitive proposal.
<b>Research Impact/Earth Benefits:</b>	The Food Fortification study will bring vitamin stability knowledge of supplements in food to the open access environment, which will help smaller food manufacturers improve the nutrition of their foods without assuming the prohibitive cost of shelf life research. The data should promote wise fortification of foods. Large-scale companies treat vitamin stability data as proprietary knowledge.
<b>Task Progress:</b>	This project concluded during FY16. To date, all fortified foods have undergone shelf-life testing to determine impact to organoleptic quality, color, and vitamin level.
<b>Bibliography Type:</b>	Description: (Last Updated: 11/05/2020)