ABSTRACT

Food system optimization will require total system resources to be minimized. Weight of food item is one factor in a total system approach. Weight optimization opportunities exist by increasing fat and decreasing water content in food items. Meal replacement options would be an efficient manner of delivering nutrition. Crew acceptability of meal replacement options will determine degree of use.

BACKGROUND

AFT System

Food system optimization will require total system resources to be minimized. Weight of food item is one factor in a total system approach. Weight optimization opportunities exist by increasing fat and decreasing water content in food items. Meal replacement options would be an efficient manner of delivering nutrition. Crew acceptability of meal replacement options will determine degree of use.

RESULTS AND DISCUSSION

Current Menu Analysis

Caloric Contribution by Food Category

<table>
<thead>
<tr>
<th>Food Category</th>
<th>Calorie Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>10.0</td>
</tr>
<tr>
<td>Meal replacement</td>
<td>9.0</td>
</tr>
<tr>
<td>Fat</td>
<td>6.0</td>
</tr>
<tr>
<td>Carbs</td>
<td>30.0</td>
</tr>
<tr>
<td>Water</td>
<td>50.0</td>
</tr>
</tbody>
</table>

Justification

The Orion vehicle is significantly smaller than the Shuttle vehicle and the food system is no longer available for analysis. Therefore, the food team has been challenged to reduce the mass of the packaged food from 1.1 kg per person per day to 0.5 kg per person per day. This has been achieved by increasing the fat content in the food items, which reduces the water content in the food items. Weight optimization opportunities exist by increasing fat and decreasing water content in food items. Meal replacement options would be an efficient manner of delivering nutrition. Crew acceptability of meal replacement options will determine degree of use.

Meal Replacement Options

Meal replacement options are being investigated. Currently, available meal replacement bars have either high organoleptic or nutritional properties, but not both. Energy gel packets are rich in carbohydrates, but lack protein and fat. Determining the degree of use for these items is necessary to reduce food system mass while maintaining crew member acceptability. Maintaining a variety of products for preventing dietary fatigue with these products will be a major concern.

REFERENCES