Fermentation Guidelines

<table>
<thead>
<tr>
<th>Food</th>
<th>Optimum Salt Level</th>
<th>Optimum Temperature Range</th>
<th>Time Range to Complete Fermentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cucumbers</td>
<td>5-8% (Brine)</td>
<td>59-89.6°F</td>
<td></td>
</tr>
<tr>
<td>Cabbage</td>
<td>2.25% (by weight of cabbage)</td>
<td>60-70°F</td>
<td>*5-6 weeks</td>
</tr>
<tr>
<td>Kimchi</td>
<td>4-6% (brine or by weight)</td>
<td>50-64°F</td>
<td>*5-20 days</td>
</tr>
<tr>
<td>Fruit</td>
<td>2-3% (brine or by weight)</td>
<td>50-59°F</td>
<td>2-6 weeks</td>
</tr>
</tbody>
</table>

* Fermentation is complete at 1.7% acidity with a pH below 3.9

<table>
<thead>
<tr>
<th>Food</th>
<th>Starter Culture</th>
<th>Optimum Temperature Range</th>
<th>Time Range to Complete Fermentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kombucha –</td>
<td>Heat to rolling boil before adding</td>
<td>75-85°F</td>
<td>12 days minimum</td>
</tr>
</tbody>
</table>

Guidelines for Kombucha production:
- If using a dehydrated starter culture, such as SCOBY, the manufacturer’s guidelines must be followed for rehydration with vinegar.
- Fermentation may be performed at lower temperatures. If this is done, holding times must be extended to appropriately compensate for reduced microbiological respiration due to lower temperatures.
- The pH must be tested by a Process Authority.
- Must be lab tested to confirm that finished product contains less than 0.5% alcohol by volume.
- Sterile bottles must be used if any bottling occurs.
- Product should be kept refrigerated (below 40°F) once fermentation is complete to avoid further alcohol production.
- Product should be labeled as “keep refrigerated.”

Additional fermented foods may be evaluated on an individual basis.

Guidelines for all fermented food production:

It is crucial that good manufacturing practices including cleanliness and proper hand washing be meticulously followed during all stages of the fermentation process.

- During processing, thoroughly wash fresh produce, the preparer’s hands, cutting utensils/board, and all containers.
- Select vegetables that are sound, undamaged, uniformly sized and at the proper ripeness.
- Fermentation vessel must be located in a secure location during fermentation.
- Culture should not be backslopped.
• The absence of oxygen is required during fermentation. Preparer needs cover product with liquid to exclude air during fermentation. Seal the fermentation vessel to exclude oxygen and ensure anaerobic conditions.
• If product becomes discolored (pink or dark) it should be discarded. This discoloration indicates spoilage.
• Detailed records during production of temperatures and pH are required.
• Equipment calibrations are required and should be documented.
• Retain records for 2 years, May vary for different products.
• Once fermentation is complete keep product under refrigeration (less than 40°F).
• Fermented foods that are processed for shelf stability require product testing by a process authority to establish an adequate thermal process specific to the product.
• Fermented foods are not considered acidified and therefore do not require registration with the FDA for selling.