The Issue of Undeclared Ingredients in Halal Food Processing
A Focus on Processing Aids

Mian N. Riaz, Ph.D.
Food Protein R&D Center; Texas A&M University
College Station, Texas USA

Outline
Processing aids and Hidden Ingredients

- What are processing aids?
- Sources of processing aids
- Why use processing aids and hidden ingredients?
- Are All hidden ingredients are Halal?
- Examples of hidden ingredients
- Control of Halal food processing aid and hidden ingredients

What are Processing Aids?

Processing aids are substances that are approved by both the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA)

They are used in the production of a variety of foods – meat, poultry, produce, etc., and are not present in any significant amount in the finished product.
What are Processing Aids?

The use of food processing aid has become more prominent in recent years, due to the increased production of prepared, processed, and convenience foods.

What are Processing aids?

Both the FDA and USDA recognize three situations in which a manufacturing substance is deemed to be a processing aid:

1. When substances are added to a food during processing but subsequently removed before the food reaches its finished form (example: activated charcoals which filter out impurities).

2. When substances are added to a food during processing and are ultimately converted into components that naturally occur in the food at insignificant levels that do not change the natural makeup of the finished product. Example: This could be some thing like pH adjuster that converts to salt and doesn’t significantly add to the level of salt in the food.

3. When substances are added to a food during processing and remain in the food but are present at only an insignificant level and have no technical or functional effect in the finished food. Example of this is sodium acid pyrophosphate used as a leavening agent.
Processing aids may perform a number of functions in the food production process.

Serve to enhance food safety by reducing potential contamination in food during processing (antimicrobials).

- Facilitating an easier removal of impurities (flocculants)

Ease the processing of the food product as a flow agent.

Prevent the food product from crystallizing in the processing conditions.
Other functions that processing aids serve include a pH control agent, a catalyst, or a clarifying agent.

In General:
Food processing aids help to improve flavor, improve its taste or nutrition value, appearance, freshness and safety.

Examples of Common Processing Aids

Some processing aids approved by FDA that are commonly used in food production include:

Fruit and vegetable washes (examples include organic acids and chlorine washes)

De-coloring agents (examples include dimethylamine epichlorohydrin co-polymer, which is used as a de-coloring agent in the refinement of sugar)
Examples of Common Processing Aids

**Strengthening agents in food** (examples include sodium stearoyl lactylate, used to strengthen dough in frozen pancakes and waffles)

**Joining agents and enzymes** (examples include rennet, which helps milk join together to make cheese)

Examples of Common Processing Aids

Processing aids approved by USDA for use in meat and poultry products are commonly used to reduce or kill foodborne pathogens.

- Control pH (examples include ammonium hydroxide)

- Control bacteria in chill water (examples include chlorine gas and ozone)

8 days of freshness. Actual results.

66 days of freshness. Actual results.
Examples of Common Processing Aids

- Wash products during the entire production process (examples include organic acids)

Examples of Common Processing Aids

- Remove feathers from poultry (examples include scalding agents)

Examples of Common Processing Aids

- Other antimicrobial agents used to reduce foodborne pathogens (examples include trisodium phosphate and ammonium hydroxide)

Examples of Common Processing Aids

- Do processing aids remain in the food after the production process is complete? If so, how much is in the finished food?

Status of Processing Aids?

- Processing aids sometimes remain after processing and are present in the finished food, but only at safe and insignificant levels

- But is that amount will jeopardize the Halal status?
Limitations of Halal Consumers

- Lack of awareness
- Understanding packaging labels
- Complexity of food ingredients
- Ambiguous food ingredients
- Diversity of products
- Emerging new food products

Sources of Processing Aids?

Some consumers may not be able to know the sources of these processing aids and have no idea why these ingredients are in the foods.

Hidden Ingredients

In a complex and globalized world it has become increasingly difficult to trace the lines that link raw materials with producers, products and consumers.
Pork (185 Different ingredients)

Processing aids and Hidden Ingredients

PORK DERIVED MATERIALS

| PANCREAS GLAND | BLOOD | ADRENAL GLANDS | BRAINS | BLOOD Sinus Aorta
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GALL GLANDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIVER</td>
<td>SKIN</td>
<td>INTESTINE</td>
<td>STOMACH</td>
<td></td>
</tr>
<tr>
<td>LIVER</td>
<td></td>
<td>MEDIA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>THYROID GLAND</td>
<td></td>
<td>MEDIA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEART</td>
<td></td>
<td>MEDIA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Varieties of Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>PANCREATIC Enzyme</td>
</tr>
<tr>
<td>Bacteria</td>
</tr>
<tr>
<td>Culture Media</td>
</tr>
<tr>
<td>Proteins Hydrolysate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Undeclared Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Several ingredients are not mentioned on the label</td>
</tr>
<tr>
<td>- Releasing agent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Undeclared Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Antifoaming agent</td>
</tr>
</tbody>
</table>
Undeclared Ingredients

Filtering agent

Processing aids and Hidden Ingredients

- Filtering agent
Is your sugar vegetarian? It might not be.

Clarifying agent

Bleaching Compounds

Food Grade Lubricants
Undeclared Ingredients

- Gum Base
  - Gum base is the non-nutritive, non-digestible, water-insoluble masticatory delivery system used to carry sweeteners, flavors and any other desired substances in chewing gum and bubble gum.
  - Two of the commonly used ingredients which are questionable are stearates and gelatin.

- Packaging Material
  - In many cases, stearte from animals might be used in the production of plastic bags and containers.
  - Metal cans and drums can be contaminated with animal fats.
  - Waxes and coatings applied to plastic, paper and styrofoam cups and plates might be from animal origin.
Undeclared Ingredients

**Enzymes as Processing Aids**

<table>
<thead>
<tr>
<th>Source</th>
<th>Type</th>
<th>Activity</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>Bacillus</td>
<td>Protease</td>
<td>Meat, beverages</td>
</tr>
<tr>
<td>Bacteria</td>
<td>Streptomyces</td>
<td>Hyaluronase</td>
<td>Beverages, starchy</td>
</tr>
<tr>
<td>Fungi</td>
<td>Aspergillus</td>
<td>Protease</td>
<td>Cheese</td>
</tr>
<tr>
<td>Fungi</td>
<td>Mucor</td>
<td>Lipase</td>
<td>Cheese, fat</td>
</tr>
<tr>
<td>Yeast</td>
<td>Saccharomyces</td>
<td>Invertase</td>
<td>Cacao</td>
</tr>
<tr>
<td>Yeast</td>
<td>Kluyveromyces</td>
<td>Chymosin/rennin</td>
<td>Cheese</td>
</tr>
<tr>
<td>Plant</td>
<td>Barley/malt</td>
<td>Amylase</td>
<td>Bakery, sugar</td>
</tr>
<tr>
<td>Plant</td>
<td>Barley/malt</td>
<td>Diastase/mylase</td>
<td>Bakery, beverages</td>
</tr>
</tbody>
</table>

**Flavor Enhancers**

- Smoke Flavorings

http://www.leffingwell.com/smoke1.html#peak

**Label show yeast extract and natural flavor. Both are legal terms. Yeast extract could be from brewery waste and could contain flavor enhancers.**
**Undeclared Ingredients**

- This label show flavor enhancer’s e-number
- But it contain, herb extract and yeast extract
- Both extract could contain several flavor enhancers

**Processing Aids and Hidden Ingredients**

- What is the source of these ingredients?

**Processing Aids not Declared on Food Labels?**

- Do processing aids remain in the food after the production process is completed?
- Because, by definition, processing aids have no technical or functional effect in the finished food.
- Because they are either not present or are present at only insignificant levels in the finished food.

---

**Table 2-1**

<table>
<thead>
<tr>
<th>Substances Currently Exempt From Declaration in the List of Ingredients</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hydrogen for hydrogenation purposes, currently exempt under 8.01.008</td>
<td>Substances</td>
</tr>
<tr>
<td>2. Cleaners and sanitizers</td>
<td></td>
</tr>
<tr>
<td>3. Head space flushing gases and packaging gases</td>
<td></td>
</tr>
<tr>
<td>4. Contact freezing and cooling agents</td>
<td></td>
</tr>
<tr>
<td>5. Washing and peeling agents</td>
<td></td>
</tr>
<tr>
<td>6. Clarifying or filtering agents used in the processing of fruit juice, oil, soybean, or corn oil</td>
<td></td>
</tr>
<tr>
<td>7. Catabolites that are essential to the manufacturing process and without which the final food product would not exist, e.g., nickel, copper, etc.</td>
<td></td>
</tr>
<tr>
<td>8. Sorption residues, membranes and molecular species that are involved in physical separation and that are not incorporated into the food</td>
<td></td>
</tr>
</tbody>
</table>
Are Processing Aids Halal?

- Yes
- No
- Maybe

Processing aids and Hidden Ingredients

- Releasing agent
- Antifoaming agent
- Filtering & clarifying agent
- Bleaching compounds
- Flavor enhancers
- Packaging material
- Greases and lubricants

Need to be Halal certified

What is the Solution?

- To make sure food is Halal
  - All the processing aids including:
    - Releasing agent
    - Antifoaming agent
    - Filtering & clarifying agent
    - Bleaching compounds
    - Flavor enhancers
    - Packaging material
    - Greases and lubricants

Key Message

- Several hidden ingredients and other processing aid can pose an issue for Halal
- Halal certification for all these ingredients may be the only solution
- We all need to work on these issues so all the Muslims make sure they are eating Halal food

Questions