Questions and Answers from *Hygienic Practices for Food Safety in Small and Medium-Size Businesses*

Q: What are the criteria used to reject a product at the point of reception of the raw material? Which method is used for aflatoxin analysis? Detection limit?

**Answer (Charles Nsubuga, Sesaco Foods, Ltd.):** The criteria are that the product is offloaded after passing the moisture content limit, bean variety and quality. Product is weighed and stored for a day to five days pending results of aflatoxin. Acceptable limits are 20ppb.

Q: The most challenge you are facing is post-harvest handling: how do you try to overcome this challenge?

**Answer (Charles Nsubuga, Sesaco Foods, Ltd.):** This is addressed by conducting smallholder farmer training and exposure through their umbrella organizations like IFDC, SASAKAAWA Global 2000 etc.

Q: What method should I follow to minimize the amount of anti-nutrients agents like oxalate and phytic acid in soymilk?

**Answer (Dr. Juan Andrade, University of Illinois):**

1. Oxalic acid (or oxalate) and myoinositol hexaphosphate (phytic acid or phytate) are two of the most widely distributed molecules in nature.
2. Although they are known as anti-nutrients, they play a role in plant metabolism and in our bodies.
3. About 20-40% of oxalate come from food. The great majority of phytate comes from food.
4. Also we make oxalic acid in our bodies, especially from protein metabolism, blood cell metabolism, vitamin C metabolism.
5. High oxalic acid and calcium present during urine formation in the kidneys potentiate the formation of kidney stones.
6. Foods containing high concentration of oxalate are spinach, rhubarb, dark chocolate, beet greens, almonds, cashews, and peanuts. Other foods include legumes, however, content varies from low (e.g., lentils, split peas, black eye peas) to high (black beans, navy beans and soybeans).
7. Among soybean products with higher oxalate content are soy flour, TVP and some versions of tempeh and lower in soy milk, tofu, soy yogurt, and soy protein concentrate and isolate.
8. Heat has more detrimental effects on phytate than on oxalate content.
9. Fermentation also reduces phytic acid and oxalate content in food products.
10. Ways to reduce the risk for kidney stone formation is to drink plenty of fluids and eat diets rich in calcium (such as dairy product and soy products).
11. Although low-phytate soybean varieties exist, less work has been conducted on low-oxalate soybeans.
Therefore methods to minimize oxalic acid and phytate in foods are limited to soaking, fermentation and heat. Sprouting also helps reduce phytates in most seeds. Phytase is particularly useful to reduce phytates in foods. Nonetheless, heat (175oF) will destroy phytase.

References


Q: How do you test for the presence of residual pathogen microorganism after production and before marketing?

Answer (Charles Nsubuga, Sesaco Foods, Ltd.): It is considered impractical and rather expensive to try to test for all pathogenic organisms, it is standard to test for the indicator bacteria organism like coliform and E.coli, since their presence give an indication of possible presence of more dangerous organisms. In our case, we use private lab service providers to do the testing periodically with a random sampling of the product and we are Issued certificates.

“Answer (Dr. Matthew Stasiewicz, University of Illinois): The difficulty with testing for microbial quality of the soymilk/yogurt is that it requires a basic microbiology lab. To do that work right, you or someone you contract with would need access to microbial plates, media, sampling equipment. Even simple tests can be done, so if you are required to have a certificate of analysis for certification, some of that will need to happen. But the better system is to put in place is to put in a high-quality Hazard Analysis Critical Control Point (HACCP) system, where you know you are producing a high quality product, and every unit you are producing well
should be safe and high quality. It is much more important to focus on prevention of a problem than testing individually, because every unit you test is a unit you cannot sell.”

**Answer (Prof. Osei, AA Pure Soyamilk):** Bottled milk is left at room temperature for one week. Contaminated bottled milk coagulates and develops odor within one week and is discarded.

**Q:** How do you ensure proper drying and storage of the raw material?

**Answer (Charles Nsubuga, Sesaco Foods, Ltd.):** The drying is strictly handled by the farmers in Uganda’s case it is sun drying to the recommended levels. While storage can be done by both the farmer and we the processors in well vents warehouses on clean pallets.

**Answer (Prof. Osei, AA Pure Soyamilk):** The raw materials are grown under appropriate climatic conditions, which ensures adequate hot dry weather of one month for pod maturation and complete drying of seeds. Soybean must not be grown in areas were pod maturation occurs at rainy months.

**Q:** How was the problem of rusty mills addressed in Benin?

**Answer (Patrice Sewade, SOJAGNON):** The ProSAM project purchased an appropriate stainless steel mill during the demonstration of good processing practices phase. But to enable Women groups to access their own mill, we are developing bankable business plans for them so that they can be linked to microfinance institutions.

**Q:** How do the plants ensure they listen to needs of consumers and act on them?

**Answer (Patrice Sewade, SOJAGNON):** Big plants like FLUDOR carry out marketing studies to understand the needs of consumers in terms of quantity, quality of the soy-derived products.

However, there were no these studies in the small-scale processing units until Sojagnon starts to work with groups of women. The private company, Benin Agribusiness Incubation Hub (BAIH-Sarl), recently developed a business plan for one of these women groups. This business plan encompasses the needs of consumers and was selected first by the African Agribusiness Incubation Network (AAIN) during its conference and expo held from 4-6 October 2016 (africaain.org)

**Q:** How much is the problem of aflatoxin in soybean /soybean products?

**Answer (Patrice Sewade, SOJAGNON):** Currently, actors of the soybean sector are not facing aflatoxin problem in Benin.

**Answer (Dr. Matthew Stasiewicz, University of Illinois):** My colleagues at BecA-ILRI in Nairobi have tested some soybeans and soymilk in Rwanda. As we discussed, levels were low: http://www.slideshare.net/ILRI/beca-aflatoxin-posterfeb2016
**Answer** (*Charles Nsubuga, Sesaco Foods, Ltd.):* The aflatoxin testing at Sesaco costs $30-$40 per testing. We do not frequently do aflatoxin testing for soybeans because you can determine soybeans that have been dried very well. Aflatoxins come into the product due to poor post-harvest handling. Otherwise, you can tell soybeans that have been properly dried and stored.

**Q:** How and where do you get access to glass bottles and how much do they cost?

**Answer** (*Prof. Osei, AA Pure Soyamilk*): They cost 15 pesewas and they must be acid-washed before you use them. We fill them by “hot-filling” with boiling milk through a tap at the base of our boiler. Then we cork them by hand and boil the bottles for 30mn.

**Q:** What measures can one talk to avoid the milk being burnt under the pot during boiling especially when using firewood as your source of fuel?

**Answer** (*Patrice Sewade, SOJAGNON*): The required duration for boiling the milk is 30 min when using gas. However, Women who use firewood as fuel have long experience in the processing chain and know the duration needed for not getting the milk burnt.

**Answer** (*Prof. Osei, AA Pure Soyamilk*): There should be a thermometer to monitor the milk temperature. Soymilk becomes overcooked beyond 120 degrees C with the Soycow.