Agri-Food Division

AGAT Laboratories

Shelf-Life Testing

Shelf life is an indication to the consumer of the period during which a food item may be stored before it begins to deteriorate, provided that the storage conditions indicated are met. According to the Canadian Food Inspection Agency (CFIA), it is the period during which the food item:

1. Is safe
2. Retains its appearance, smell, texture and flavour
3. Retains its chemical, physical, microbiological and functional characteristics
4. Is compliant with nutrition claims

The shelf life of a product begins when the food item is prepared or manufactured. Its duration depends on many factors, including the type of ingredients, the manufacturing process, the type of packaging and the mode of storage used.

Any packaged food that has a shelf life of less than 90 days must indicate a shelf life ("Best Before") date and storage instructions to meet the conservation period.

The expiry date must be validated by an experienced accredited laboratory.

In most cases, this responsibility lies with the food manufacturer, but it can also be the responsibility of secondary processors, food retailers and supermarkets.

Why is this necessary?

- For the development and formulation of new products
- To validate a new production method
- To verify new packaging

Defining the end of shelf life is generally based on the number of micro-organisms present. This is the period in relation to the original date, during which the food item remains within the microbiological limits set for food safety (pathogenic bacteria, spoilage microorganisms).

In other cases, the end of shelf life may be determined by sensory or biochemical deterioration.

The exact procedure (protocol) to follow is unique for each product. It depends on the intrinsic factors of the food item:

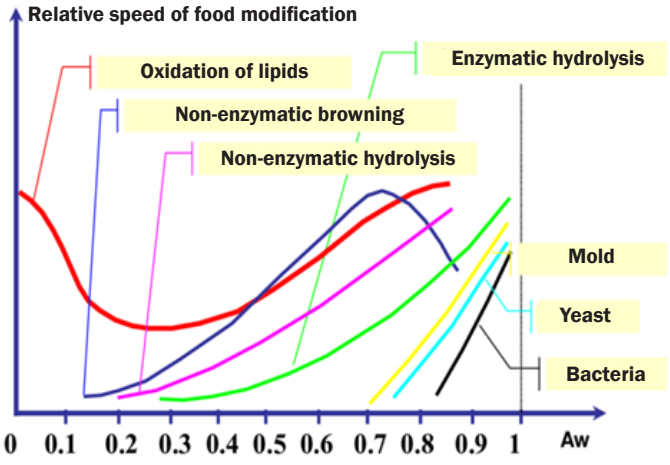
- Initial flora
- Composition, ingredients, presence of preservatives
- pH and water activity
- Heterogeneity

Extrinsic factors:

- Temperature and storage time involved
- Manufacturing process
- Packaging

Not all tests are appropriate for all products. For example, we can test raw meats to determine the number of lactic bacteria, but not fermented raw meats for these same organisms.

We can help you set up the protocol and plan the shelf-life study.



What tests to perform

This assessment is based on the Guidelines and Standards for the Interpretation of Analytical Results in Food Microbiology (MAPAQ) and/or the Health Products and Food Branch (HPFB) Standards and Guidelines for Microbiological Food Safety - Interpretive Summary.

Chemical tests can detect changes in quality over the entire shelf life. Examples include pH, peroxide index and free fatty acids.

How long will the study last and how often will the tests be done?

It is suggested that sampling be done at the beginning, at the intended end point, and on about three occasions in between. Additional sampling should be conducted beyond the target to confirm the final point selection. Validation is done in real time.

How many samples will be tested each time?

A minimum of 2 containers should be tested at each sampling interval to account for product variability, and to allow the laboratory to produce a certified document.

The more samples are tested at each of these intervals, the higher the confidence level in the validity of the shelf-life study results.

Sensory assessment can be conducted concurrently with microbial testing to establish the correlation between product quality and safety degradation and microbial growth.

The product, process and packaging must be the same as those you intend to use for the final product.

If you wish to store your product without refrigeration, you will need to provide a laboratory report that indicates that your product meets the criteria for room temperature storage (i.e. high acidity - pH less than 4.5 or low water activity - less than 0.85). Without documentation, this product requires refrigeration.

Manufacturers are responsible for demonstrating that their foods limit the growth of pathogenic microorganisms to the established storage temperature and shelf life.

To continuously collect data as evidence that the established shelf life is valid, it is recommended that microbiological testing be conducted on the finished product two or three times per year.

What We Offer

- Evaluation and grouping of products into categories according to their characteristics.
- Sampling schedule.
- Reference to the microbiological analytical methods used.
- Microbiological criteria related to product safety according to MAPAQ and Health Canada guidelines.
- Customer portal to track your results in real time
- Official analytical report.
- Interpretation of results. (Certified document)

For a complete list of our laboratories and branches, visit our website at **www.agatlabs.com**

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