CHOKSI LABORATORIES LIMITED

shelf-life ...food designs

Shelf life represents the useful storage life of food. At the end of shelf life, food may develop characteristics such as changes in taste, aroma, texture or appearance -- that are deemed unacceptable or undesirable.

The underlying cause for the product deterioration may be microbiological, chemical / enzymatic or physical.

Objectives.
Shelf life determination aids in product design, formulation change, packaging & storage change.

Variables.
Many factors must be considered when designing a shelf-life study. Among these are: temperature, water content, time, types of microorganisms, packaging, product's composition, suitability of analyses, sampling and replication. Shelf-life studies for each product should be designed specifically for that product because of the number of variables that must be considered.

Sampling.
Sampling has to take into consideration the microorganism type, rate of growth and life-cycle, batch-to-batch variations in product quality, product homogeneity & estimated shelf-life. Periodic determinations of shelf life help to provide assurance that the product remains consistent over time with respect to spoilage rate. Changes in formulation, processing and packaging conditions call for reevaluating a product's shelf life.

Challenge Tests.
A food may exhibit an exceptionally long shelf life even though the temperature, pH, water and nutrient levels permit microbial growth. The long shelf life may result from the absence of microorganisms in the samples tested, or it may occur because the contaminating organisms will not grow in the particular product formulation. Understanding the stability of these foods in the event of a chance contamination requires a microbiological shelf-life study in which a product is challenged by inoculating it with appropriate spoilage organisms.

In a challenge study, the product is inoculated with known spoilage microorganisms. The inoculated samples are then treated and stored in accordance with the shelf-life study guidelines. If the pathogens do not grow, the food is considered stable with respect to the ability of the food system to inhibit their growth.

Mathematical modeling.
The influences of atmosphere, temperature, water, pH, preservatives and nutrients on the microbial growth are easily measured. Collecting sufficient data makes it possible to derive a mathematical equation of growth. This could allow a quick estimation of shelf life by plugging the required variables for the food into the equation.

Accurate prediction of shelf life necessitates a carefully planned and executed series of experimental studies. The knowledge gained from these studies reliably promotes confidence that the product delivered to the customer is safe and of high quality.

Extracts adapted from ***Dr. Michael S. Curiale's paper.***

Choksi Laboratories Limited has four state-of-the-art laboratories approved by FDA, Ministry of Health & Family Welfare (MoHFW), & Bureau of Indian Standards (BIS), and employs over 200 analysts, engineers and microbiologists.

Accredited on ISO/IEC 17025, Choksi Laboratories Limited has been serving industry leaders as a partner of choice for various quality assurance solutions. With over 25 years experience in analytical testing, we can assist you in meeting all your regulatory requirements.

If you are interested in designing a shelf-life study for your product, contact us with the following details:

Product Formulation, Estimated / Claimed Shelf-Life, Storage Conditions in the post-production supply chain, & Geographical area for consumption (for climactic zone determination).

Your product details shall be treated in strictest confidence.

CLL also offers several other food-related analyses based on AOAC, AOCS, BIS, PFA, CODEX, & EU norms. With our recently expanded network, we can now provide you with a sample collection facility in over 15 Indian Cities.

If you would like get your sample(s) analyzed, email us at info@choksilab.com, or call us on any of the numbers listed below. If you are located in a city not listed below, email us anyway – our centralized courier solutions will help to simplify your sample delivery at our labs.

CLL–Your Partners in Quality

CLL CORPORATE OFFICE AND CENTRAL LABORATORY:

6/3 Manoramaganj, Indore - 452001 (MP)
Tel: +91-731-2493592/3, 2490592;
Fax: +91-731-2490593;
Email: info@choksilab.com

BRANCH LABS:
CLL Vapi (Gujarat), CLL Vadodara (Gujarat), CLL Panchkula (Haryana)

Regional Offices & Sample Collection Centers:
Ahemadabad, Bangalore, Chennai, Cochin, Calcutta, Cochin, Delhi, Goa, Gwalior, Hyderabad, Jaipur, Kolkatta, Kanpur, Mumbai, Nashik, Pune, Raipur, Rajkot, Roorkee, Surat