



# Laboratory Services



TESTING  
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**Testing**

ISO/IEC 17025 ACCREDITED BY

**Department of Medical Sciences (DMSc)  
Department of Science Service (DSS)**



**Calibration**

ISO/IEC 17025 ACCREDITED BY

**Thai Industrial Standards Institute (TISI)**



PTP

No.0002

**Proficiency Testing**

ISO/IEC 17043 ACCREDITED BY

**Department of Science Service (DSS)**

# Laboratory Services

## Chemical Analysis: (Physical and sensory food analyses)

- Physical and sensory food analyses
- Analyses of insecticide residues in fruits and vegetables, and agricultural products
- Analyses of veterinary drug residues in meat and meat products
- Analyses of microbiological toxins
- Analyses of food adulterants
- Analyses of food nutrients
- Thai FDA compliant nutrient analyses for Nutrition label requirements  
U.S., E.U. and Hong Kong-FDA compliant nutrient analyses for Nutrition label requirements
- Analyses of heavy metals and minerals
- Analyses of dioxin-like compounds such as polychlorinated-bi-phenyls (PCBs)
- Analyses of food packing materials and materials in contact with food contaminants such as polyethylene and others

## Microbiological Analysis

- Common food borne and enumeration test requirements for food and agricultural products
- Microbiological test analyses for acid-, low acid- and high acid-canned foods
- Swab tests (for food processing environment locations)
- Food product shelf life tests

## Water Analysis (Chemical /microbiological quality analyses for water)

- Chemical/microbiological quality analyses for water compliant to the requirements of the Department of Industry, Department of Medical Science and the Department of Medical Service

## Calibration Service

- Calibration services for scientific tools and instruments are provided to ensure measurement accuracy. In addition, it is a prerequisite to setting up a quality standard system such as HACCP, ISO 14000, ISO/IEC 17025 and other quality system standards.

## Proficiency testing

- Proficiency testing programs on various microbiological and chemical substances that are tolerable in foods and water based on ISO 17043:2012 requirements are periodically offered.

# Background

## Nitrofuran Group

Nitrofuran is a synthetic antibiotic used for killing infection bacteria. Commonly found nitrofuran group of residues in food animal products are mostly derived from the following veterinary products: furazolidone, furaltadone, nitrofurazone and nitrofuratoin. This chemical group is known to be carcinogenic that causes gene alteration in animals.

## Chloramphenicol Group

Chloramphenicol is known as a highly effective broad spectrum antibiotic that is derived from the microorganism - *Streptomyces venezuelae*. Currently, there are three major chloramphenicol derivatives that possibly may be found in food-producing animals that pose health concerns and these include: Chloramphenicol, Thiamphenicol, Flofenicol. This group of antimicrobials is known to cause aplastic anemia in humans that may eventually cause death. Continuous ingestion of chloramphenicol-contaminated food at low dosage may result in the production of chloramphenicol resistant microorganisms, which could pose health threat to food consumers. This is the reason why a highly restrictive safety requirement is being imposed on those substances by most food regulatory agencies especially the U.S. and E.U.

## Insecticide residues in fruits and vegetables, and other agricultural products

Fruits and vegetables are rich sources of vitamins and minerals, which are important in maintaining people's health and well being. However, market prices of most of these products often depend on their quality (mostly physical attributes). Thus, farmers often resort to the use of insecticides to protect the quality of their produce. Presently, there are 4 major groups of insecticides that are of consumers' major concerns including; organochlorines, organophosphates, carbamates, and pyrethroids. Accumulated ingestion of the insecticide residues from fruits and vegetables may not only endanger consumers' health but also increase their risk for the hazards' possible adverse systemic body impacts. For that reason, fruits and vegetables, whether they are meant for export or for local consumption, need be checked for insecticide residues.

## Heavy Metals

Recently, cadmium used in battery production and other industrial productions have been implicated in the contamination of the environment including soil, water and the foods that are produced and raised in the area. Cadmium is a toxic substance with serious health implications. Cadmium poisoning may result by ingesting contaminated food, water or through respiration or skin contact. Its toxic effects maybe acute or chronic depending on the level and frequency of one's exposure. Toxic manifestations could range from severe head ache, gastroenteritis, and fainting. Serious food in water cadmium contamination has been associated to the "itai-itai" disease, which is a cadmium-induced bone toxicity manifestation that led to painful bone fractures.

# Background

## Analyses of Food Nutrients for Nutrition Labeling

To protect and help consumers make informed dietary food selection, the Ministry of Public Health has imposed mandatory nutrition labeling for the following foods:

1. Foods that make reference to nutritional values
2. Foods that use nutritional values to support their sales
3. Foods that are produced for a specific consumers group
4. Most packaged foods and other foods specified under the Food and Drug Administration's Food Act

## Dioxin as in Polychlorinated bi-phenyls (PCBs)

Dioxin is a hydrocarbon with chlorine as its major element, thus chlorinated hydrocarbons are otherwise known as polychlorinated bi-phenyls or PCBs. PCBs are commonly found and used in a number of the production industries including : food, heat exchanger systems, lubrication additives, insecticides, animal protectant chemicals, plasticizers, paints, glues, sealants and plastic packaging materials. Thus, the chance of being exposed to PCBs contamination through food consumption is rather great, considering the likelihood of contamination occurrence along the food supply chain. For example, man can be exposed to PCBs through consumption of the meat of the food animal that has ingested PCB-contaminated feed. Because PCBs are mostly absorbed and accumulated in animal fats, the foods derived from such source like butter, milk, egg, and meat are also PCB-contaminated. Typical PCB-exposure manifestations in man include: swollen eyes, darkening of nails, rough skin, small skin infection spots, liver cancer, bronchitis, defective nervous system, etc.

## Food Packaging and Food Contact Material Contaminations

Examination of food packaging and materials in contact with food contamination is an on-going concern for most food seasoning and oily food products manufacturers. Possible food absorption of contaminants emanating from the food packaging and contact materials are likely to not only affect food quality but also increase consumers' health risk. Known contaminant impacts include: promoting microbial growth in the package and altering food flavor, color and other sensory food qualities. The contaminants of notable concerns especially to E.U. are phthalates and Epoxidised Soy Bean Oil (ESBO). Phthalates are known to be hazardous to our digestive track, kidneys and urinary bladder while ESBO has been found to be detrimental to both liver and kidneys. These substances are soluble in fats and oils thus tests for migration of these substances in plastic packed foods such as food seasoning, food curry, fish sauce or chili sauce products are necessary to ensure that these products are compliant to food safety requirements

# Background

## *Salmonella sp.*

*Salmonella sp.* are bacteria that can grow under aerobic or anaerobic condition. They grow optimally at 35 - 42 °C but they are not heat resistant. Ingestion of food contaminated with *Salmonella* could cause diarrhea, vomiting and loss of body fluid. *Salmonella* contamination are prevalent in "ready to eat food" such as frozen food, pork meat, chicken meat, fresh vegetable products and fresh fruit products.

## *Staphylococcus aureus*

*Staphylococcus aureus* is a bacteria commonly found in human skin and respiratory tract. They grow optimally at a temperature range of 30-37 °C. The bacteria are also known to produce food toxin in food which can induce diarrhea and vomiting. *Staphylococcus aureus* contamination in food are commonly found in meat and meat products and sea food.

## *Clostridium perfringens*

*Clostridium perfringens* is a bacteria commonly found in soil, dung, digestive track of man and animal, and in animal meat products. Its toxin can cause gastroenteritis and diarrhea. *Clostridium perfringens* contamination usually happens when prepared food such as beef or pork meat is left to cool down without refrigeration, or when cooked food is warmed before consumption. To ensure food safety, food needs to be heated to over 80 °C.

## Microbiology and safety of canned food and food in closed containers

Canned food products are the most widely consumed food in the world. Canned food is processed under a high sterilization temperature, thus killing all the microorganisms in can. Spoilage of canned food may be caused by either the growth of some bacterial spores that escaped thermal destruction or by a leakage in can that allowed bacterial entry. Spoilage in high acid canned food may not be detectable unless tests are performed as no apparent physical manifestation may be evident in can but in low acid canned food, swelling of can is an evident indicator for the presence of *Clostridium botulinum* bacteria which produce a deadly toxin.

# Background

## Determination of Shelf Life of Product

Determination of food product shelf life is done to predict the storage life of food. Storage life is defined as the time duration that the product remains in suitable quality under specific storage and transporting conditions. Processing, transporting, and storage conditions affect the quality and storability of the food product as they may hasten or reduce microbiological changes that contribute to the physical and chemical changes in foods, often associated to food deterioration. Inaccurate shelf life determination of food products may cause consumers' complaints which may lead to product rejection and low sales volume.

## Proficiency testing

Proficiency testing is a tool used for evaluating the laboratory's testing or handling ability to perform a specific laboratory test item, which might be comparable to a laboratory quality control step subject to an outside auditor's evaluation. Participation in a proficiency testing program will not only equip the laboratory with the practical tools for evaluation but also produce data to show its analytical capability and reliability. Additionally, it would also reflect the continuous improvements of their test proficiency, methods and laboratory efficiency. Proficiency test is also important for monitoring laboratory performance to ensure that it is in compliant to ISO/IEC 17025 quality standards. Proficiency testing program providers are also required to conform with the ISO 17043:2010 and ILAC 613:2000 standard requirements.

## Calibration services

In most production industries and analytical laboratories, measuring tools and equipment are important in controlling the quality of their production and their laboratory tests services. Instrument calibration can build the confidence of the tool users by trusting the preciseness and accuracy of the measured values that they obtained from their calibrated instruments. Calibration of tools and equipment that measure mass, volume, temperature and others is thus necessary to ensure test measurement accuracy and reliability.

# Testing

## Proximate analysis

Test item(s)	Method
Acidity (Total Acid)	AOAC
Alkalinity of soluble ash	AOAC
Ash*	AOAC
Ash insoluble in acid	AOAC
Brix	Refractometer
Caffeine	HPLC
Calories*	Calculation
(Fat/Ash/Moisture/Protein/Carbohydrate)	
Carbohydrate (Including Fiber)*	AOAC
(Fat/Ash/Moisture/Protein)	
Carbohydrate (Excluding Fiber)	AOAC
(Fat/Ash/Moisture/Protein/Crude fiber)	
Cholesterol	GC
Color in sugar	ICU/MSA
Crude Fiber	AOAC
Dietary fiber*	AOAC
Fat/Oil*	AOAC
Fatty acid (unsat & saturated fat )*	GC
Free fatty acid (oil/fat)	The chemical Analysis of food

Test item(s)	Method
Moisture*	AOAC
Net weight / Drain weight	AOAC
Peroxide value (in food)	AOAC
Peroxide value (oil/fat)	AOAC
pH	pH meter
Protein/Nitrogen (Total)*	AOAC
Sensory test for General Foods	TIS
Sensory test for Oderless of Refri gerator	TIS
Solid (Total)	AOAC
Solid not fat	AOAC
Soluble and insoluble ash	AOAC
Sugar (reducing/invent)	AOAC
Sugar (total)*	HPLC
(Glucose/Fructose/Sucrose/ Lactose/Maltose)	
Sulfate ash	AOAC
Total volatile (base) nitrogen	The chemical Analysis of food
Trans fatty acid*	GC
Water activity (aw)	AOAC

## Vitamins

Test item(s)	Method
Vitamin A (Retinol)*	HPLC
Vitamin B1 (Thiamine)*	HPLC
Vitamin B2 (Riboflavin)*	HPLC
Vitamin C (Ascorbic acid)*	HPLC

Test item(s)	Method
Vitamin E	HPLC
Vitamin D3	HPLC
Vitamin K	HPLC
β-Carotene	HPLC

## Metals and other elements

Test item(s)	Method
Arsenic (Total and Inorganic)	ICP-OES
Inorganic Arsenic (only in rice and seaweed)	AOAC(ICP-OES)
Arsenic (As)*	AOAC(ICP-OES)
Cadmium (Cd)*	AOAC(ICP-OES)
Calcium (Ca)*	AOAC (ASS)
Chromium (Cr)*	AOAC(ICP-OES)
Copper (Cu)*	AOAC (ASS)
Lead (Pb)*	AOAC(ICP-OES)
Magnesium (Mg)*	AOAC (ASS)

Test item(s)	Method
Manganese (Mn)*	AOAC(ICP-OES)
Mercury (Hg)*	AOAC(ICP-OES)
Phosphorus (P)*	AOAC(ICP-OES)
Potassium (K)*	AOAC (ASS)
Sodium (Na)*	AOAC (ASS)
Selenium (Se)	AOAC(ICP-OES)
Iron (Fe)*	AOAC (ASS)
Tin (Sn)*	AOAC(ICP-OES)
Zinc (Zn)*	AOAC (ASS)

## Food Additives

Test item(s)	Method
Benzoic acid/ Sorbic acid*	HPLC
Borax	Qualitative/AOAC
Formaldehyde (Formalin)	Qualitative
Nitrate*	AOAC
Nitrate	IFU
Nitrite*	AOAC
Nitrite	IFU
Monosodium Glutamate (MSG) as L-Glutamic ;	HPLC
Glutamic acid	HPLC
Phosphate (as P2O5) in food	AOAC (UV)
Salt (as NaCl)*	AOAC
Propyl gallate (PG)	HPLC
Propionic acid	HPLC
TBHQ	HPLC

Test item(s)	Method
Sulfur dioxide (SO <sub>2</sub> )	AOAC
Scoville heat units (SHU)	AOAC/HPLC
Capsaicin (ppm)	AOAC/HPLC
Saccharin	HPLC
Buthyllated Hydroxy Aninsole (BHA)	HPLC
Buthyllated Hydroxy Toluene (BHT)	HPLC
Synthetic color (D/ND)	Qualitative/TLC
Salicylic acid	Qualitative/AOAC
Potassium Acesulfame (Accsulfame K)	HPLC
Sodium Cyclamate	HPLC
Histamine	Fluorometry
Patulin	HPLC
Aspartame	HPLC

# Testing

## Food Additives color

Test item(s)	Method
Azorubine	HPLC
Brilliant blue FCF	HPLC
Fast green FCF	HPLC
Indigotine	HPLC
Erythrosin	HPLC

Test item(s)	Method
Ponceau 4R	HPLC
Sunset yellow FCF	HPLC
Tatrazine	HPLC
Food color additives (Unknown Set) (Synthetic color)	HPLC

## Dyeing color (สีต๋องห้าม)

Test item(s)	Method
Orange II	HPLC
Para red	HPLC

Test item(s)	Method
Rhodamine B	HPLC
Sudan red I-IV	HPLC

## Antibiotics

Test item(s)	Method
Acrylamide *	LC-MS/MS
Ampicilin	LC-MS/MS
Beta agonist (in meat)* (Clenbuterol /Salbuterol / Ractopamine)	LC-MS/MS
Chloramphenical*	LC-MS/MS
Nitrofurans (as metabolite form)* (AH, AMOZ, AOZ, SC)	LC-MS/MS
Fluoroquinolone group(meat and marine)*	LC-MS/MS
• Enrofloxacin*	LC-MS/MS
• Ciprofloxacin*	LC-MS/MS
• Norfloxacin	LC-MS/MS
• Sarafloxacin	LC-MS/MS
• Danofloxacin	LC-MS/MS
• Difloxacin	LC-MS/MS
• Orbifloxacin	LC-MS/MS
Malachite green / Leucomalachite green*	LC-MS/MS
Melamines* (Cyanuric acid/Ammiline/Ammilide)	LC-MS/MS
Penicilin	LC-MS/MS

Test item(s)	Method
Quinolones group	
• Oxolinic acid*	HPLC
• Flumequine*	HPLC
Sulfonamides (in meat and marine)*	LC-MS/MS
• Sulfadiazine (SD)	LC-MS/MS
• Sulfaquinoxaline (SQ)	LC-MS/MS
• Sulfamethazine (SMZ)	LC-MS/MS
• Sulfathiazole (STZ)	LC-MS/MS
• Sulfemerazine (SMR)	LC-MS/MS
• Sulfadimethoxine (SDM)	LC-MS/MS
Sulfonamides group in honey	
• Sulfaquinoxaline	LC-MS/MS
• Sulfamethazine	LC-MS/MS
• Sulfadiazine	LC-MS/MS
Tetracycline group in honey	LC-MS/MS
Tetracycline group(in meat and marine)*	LC-MS/MS
• Tetracycline	LC-MS/MS
• Oxytetracycline	LC-MS/MS
• Choltetracycline	LC-MS/MS

## Mycotoxin

Test item(s)	Method
Aflatoxin (Total) (B1/B2/G1/G2)*	HPLC
Aflatoxin B1	HPLC
Aflatoxin B2	HPLC
Aflatoxin G1	HPLC
Aflatoxin G2	HPLC

Test item(s)	Method
Aflatoxin (Total)	Fluorometry
Aflatoxin M1	HPLC
Ochratoxin A	Fluorometry

## Polychlorinated biphenyls (PCBs)

Test item(s)	Method
PCBs in fat/oil *	GC-MS
• PCBs 28	• PCBs 138
• PCBs 52	• PCBs 153
• PCBs 101	• PCBs 180
• PCBs 118	

Test item(s)	Method
PCBs in Seafoods *	GC-MS
• PCBs 28	• PCBs 138
• PCBs 52	• PCBs 153
• PCBs 101	• PCBs 180
• PCBs 118	

## Pesticide Residues

Test item(s)	Method
<b>Pesticide Residues in food</b>	
Organochlorines (19 items)*	CDFA (GC-MS/MS)
Organophosphates (32 items) *	CDFA (GC-MS/MS)
Pyrethroids (6 items)*	CDFA (GC-MS/MS)
Carbamates (10 items)	CDFA (GC-MS/MS)

Test item(s)	Method
<b>Pesticide Residues in Oil/Fat</b>	
Organochlorinees	CDFA (GC-MS/MS)
<b>Pesticide Residues</b>	
Pesticide Residues 242 items	GC-MS/MS, LC-MS/MS



# Testing

## Nutrition Labeling

Test item(s)	Method
<b>Nutrition Labeling Thai-RDI*</b>	Thai-RDI
• Total Energy	• Sugars
• Energy from fat	• Sodium
• Total fat	• Calcuim
• Saturated fat	• Iron
• Cholesterol	• Vitamin A
• Protein	• Vitamin B1
• Total Carbohydrate	• Vitamin B2
• Dietary fiber	
<b>Nutrition Lableing Thai and US</b>	Thai RDI & US-FDA
• Total Energy	• Sodium
• Energy from fat	• Calcuim
• Total fat	• Iron
• Saturated fat	• Vitamin A
• Cholesterol	• Vitamin B1
• Protein	• Vitamin B2
• Total Carbohydrate	• Vitamin C
• Dietary fiber	• Trans Fatty acid
• Sugars	

Test item(s)	Method
<b>Nutrition Lableing US-FDA</b>	US-FDA
• Total Energy	• Sugars
• Energy from fat	• Sodium
• Total fat	• Calcuim
• Saturated fat	• Iron
• Cholesterol	• Vitamine A
• Protein	• Vitamine C
• Total Carbohydrate	• Trans Fatty acid
Dietary fiber	
<b>Nutrition Lableing Thai&amp;US แบบย่อ</b>	Thai-RDI & US-FDA
• Total Energy	
• Total fat	
• Protein	
• Total Carbohydrate	
• Sugars	
• Sodium	

## Water analysis

Test item(s)	Method
Aluminium (Al)	AWWA
Arsenic (As)	AWWA
Barium (Ba)	AWWA
Cadmium (Cd)	AWWA
Calcium (Ca)	AWWA
Chloride (Cl)	AWWA,IC
Chromium (Cr)	AWWA
Copper (Cu)	AWWA
Cyanide (CN <sup>-</sup> )	AWWA
Iron (Fe)	AWWA
Lead (Pb)	AWWA
Magnesium (Mg)	AWWA
Manganese (Mn)	AWWA
Mercury (Hg)	AWWA
Molybdenum (Mo)	AWWA
Nitrite	AWWA,IC
Nitrate	AWWA,IC
pH	pH meter
Phosphorus (P)	AWWA
Phosphate (as P <sub>2</sub> O <sub>4</sub> <sup>3-</sup> )	AWWA,IC
Sulfate (SO <sub>4</sub> <sup>2-</sup> )	AWWA,IC
Silver (Ag)	AWWA
Tin (Sn)	AWWA
Zinc (Zn)	AWWA
Total hardness	AWWA
Total Solids	AWWA
Turbidity (NTU)	AWWA
Aerobic plate count (APC)	AWWA
Coliform	AWWA
<i>E.coli</i>	AWWA
<i>Staphylococcus aureus</i>	AWWA
<i>Clostridium perfringens</i>	In-house method FDA-BAM
<i>Salmonella sp.</i>	In-house method AWWA

Test item(s)	Method
<b>Water (set) ตามประกาศ สธ. ฉบับที่ 61 , 135</b>	
• Turbidity	• pH
• Total Solids	• Total hardness
• Arsenic	• Cadmium
• Chloride	• Chromium
• Copper	• Iron
• Magnesium	• Lead
• Mercury	• Zinc
• Nitrate	• Sulfate
• Barium	• Aluminium
• Selenium	• Fluoride
• Cyanide	• Phenol
• Silver	• Color
• Odor	• ABS
• Coliform	• Staphylococcus aureus
• E.coli	• Salmonella sp
<b>Water (set) ตามประกาศ มอก. ฉบับที่ 257</b>	
• Turbidity	• pH
• Total Solids	• Arsenic
• Cadmium	• Calcium
• Chloride	• Chromium
• Copper	• Iron
• Magnesium	• Lead
• Mercury	• Zinc
• Nitrate	• Sulfate
• Barium	• Magnesium
• Selenium	• Fluoride
• Cyanide	• Phenol
• ABS	• Color
• Coliform	• E.coli
• Aerobic plate count (APC)	•

## Food Contact Material

Test item(s)	Method
Type of plastic /ชนิดของพลาสติก	TISI 655 เล่ม1-2553
โพแทสเซียมเพอร์แมงกาเนตที่ใช้ทำปฏิกิริยา	TISI 655 เล่ม1-2553
สิ่งที่เหลือจากการระเหย	TISI 655 เล่ม1-2553
โลหะหนัก (เทียบเป็นตะกั่ว)	TISI 655 เล่ม1-2553

Test item(s)	Method
พลวง	TISI 655 เล่ม1-2553
เจอร์มาเนียม	TISI 655 เล่ม1-2553
Lead/ตะกั่ว	TISI 655 เล่ม1-2553
Cadmium/แคดเมียม	TISI 655 เล่ม1-2553

# Testing

## MICROBIOLOGICAL ANALYSIS

Test item(s)	Method
Aerobic plate count (APC) @ 35C* : cfu/g	FDA-BAM
Aerobic plate count (APC) @ 30C : cfu/g	FDA-BAM
Aerobic Plate Count (APC) : Petrifilm : cfu/g	AOAC
<i>Bacillus cereus</i> * : cfu/g	FDA-BAM
<i>Bacillus cereus</i> * : ND/0.1g	ISO
Coliform* : MPN/g	FDA-BAM
<i>Clostridium perfringens</i> * : cfu/g	FDA-BAM
<i>Clostridium perfringens</i> * : ND/0.1g	FDA-BAM
<i>Clostridium perfringens</i> * : ND/0.01g	FDA-BAM
<i>Escherichia coli</i> (E.coli)* : MPN/g	FDA-BAM
<i>Escherichia coli</i> (E.coli)* : ND/0.1g	FDA-BAM
<i>Escherichia coli</i> (E.coli)* : Petrifilm : cfu/g	AOAC
<i>Enterobacteriaceae</i> : cfu/g	ISO
Fecal coliform : MPN/g	FDA-BAM
Heat resistant bacteria : cfu/g	APHA
Heat resistant mold : cfu/g	APHA

Test item(s)	Method
Incubation Test	TIS 335
Lactic acid bacteria : cfu/g	ISO
<i>Listeria monocytogenes</i> * : ND/25g	ISO
<i>Listeria monocytogenes</i> : cfu/g	ISO
<i>Listeria sp.</i> : ND/25g	ISO
<i>Salmonella sp.</i> : ND/25g	FDA-BAM
<i>Staphylococcus aureus</i> * : cfu/g	FDA-BAM
<i>Staphylococcus aureus</i> * : ND/0.1g	FDA-BAM
<i>Staphylococcus aureus</i> * : MPN/g	FDA-BAM
<i>Staphylococcus aureus</i> : ND/0.01g	In house method based on TIS 335
Thermophilic aerobic count (APC 55 c) : cfu/g	FDA-BAM
<i>Vibrio cholerae</i> * : ND/25g	FDA-BAM
<i>Vibrio parahaemolyticus</i> * : MPN/g	FDA-BAM
<i>Vibrio parahaemolyticus</i> : ND/25g	FDA-BAM
Yeast & Mold* : cfu/g	APHA

## Low acid canned food

Test item(s)	Method
Total plate count (TPC)* : cfu/g,ml	TIS 335
Coliform* : ND/0.1g,ml	TIS 335
Flat sour spoilage* : ND/0.2g,2ml	TIS 335
Putrefactive anaerobe* : ND/0.2g,2ml	TIS 335
<i>Salmonella sp.</i> * : ND/20g,20ml	TIS 335
<i>Staphylococcus aureus</i> * : ND/0.01g,0.1ml	TIS 335
<i>Streptococcus</i> * : ND/0.2g,2ml	TIS 335
Sulfide spoilage* : ND/0.1g,ml	TIS 335
Thermophilic anaerobe* : ND/0.2g,2ml	TIS 335
Incubation Test	TIS 335
Microbial growth at 35 C* : ND/2g : pH>4.6	FDA-BAM
Microbial growth at 55 C* : ND/2g : pH>4.6	FDA-BAM

Test item(s)	Method
<b>Low acid canned food</b>	
• Total plate count (TPC)*	• <i>Staphylococcus aureus</i> *
• Coliform*	• <i>Streptococcus</i> *
• Flat sour spoilage*	• Sulfide spoilage*
• Putrefactive anaerobe*	• Thermophilic anaerobe*
• <i>Salmonella sp.</i> *	• Incubation Test
<b>Sterility Test (Low acid food : pH&gt;4.6)*</b>	FDA-BAM
• Microbial growth at 35 C* : ND/2g	
• Microbial growth at 55 C* : ND/2g	

## High acid and Acid canned food

Test item(s)	Method
Aciduric spoilage* : ND/0.1g,ml	TIS 335
Coliform* : ND/0.1g,ml	TIS 335
Flat sour spoilage* : ND/0.2g,2ml	TIS 335
Total plate count (TPC)* : cfu/g	TIS 335
Yeast & Mold* : cfu/g	TIS 335
Incubation Test	TIS 335
Microbial growth at 30 C : ND/2g : pH≤4.6	FDA-BAM
Microbial growth at 55 C* : ND/2g : pH≤4.6	FDA-BAM

Test item(s)	Method
<b>High acid and acid canned food</b>	
• Aciduric spoilage*	• Total plate count (TPC)*
• Coliform*	• Yeast & Mold*
• Flat sour spoilage*	• Incubation Test
<b>Sterility Test (High acid food : pH ≤ 4.6)</b>	FDA-BAM
• Microbial growth at 30 C : pH≤4.6 : ND/2g	
• Microbial growth at 55 C* : ND/2g	

## Swab Test

Test item(s)	Method
Coliform : MPN/unit	In-house method FDA-BAM
Fecal coliform : MPN/unit	In-house method FDA-BAM
<i>Escherichia coli</i> (E.coli) : MPN/unit	In-house method FDA-BAM
<i>Listeria monocytogenes</i> : ND/unit	In-house method ISO
<i>Salmonella sp.</i> : ND/unit	In-house method FDA-BAM
<i>Staphylococcus aureus</i> : cfu/unit	In-house method FDA-BAM

Test item(s)	Method
<i>Clostridium perfringens</i> : ND/unit	In-house method FDA-BAM
Aerobic plate count : cfu/unit	In-house method FDA-BAM
<i>Bacillus cereus</i> : cfu/unit	In-house method based on BS
Yeast & Mold : cfu/unit	In-house method APHA
ชุดอุปกรณ์สำหรับ Swab test	BPB เจือจาง/ไม้น้ำล้าง (Steriled)

# Testing

## Beverage /ice / water

Test item(s)	Method
Aerobic plate count* : cfu/ml	AWWA
Coliform* : MPN/100ml	AWWA
<i>Clostridium perfringens</i> * : ND/100ml	In-house method FDA-BAM

Test item(s)	Method
<i>E.coli</i> * : MPN/100ml	AWWA
<i>Staphylococcus aureus</i> * : ND/100ml	AWWA
<i>Salmonella spp</i> * : ND/100ml	In-house method AWWA

## Shelf life

Test item(s)	Method
1. Physical	-
2. Sensory	-

Test item(s)	Method
3. Chemical	-
4. Microbiological	-

### หมายเหตุ

- \* ได้รับการรับรองตามมาตรฐาน ISO/IEC 17025 หมายเลขทะเบียน 1005/42 กรมวิทยาศาสตร์การแพทย์
- \* ได้รับการรับรองตามมาตรฐาน ISO/IEC 17025 หมายเลขทะเบียน 0037 กรมวิทยาศาสตร์บริการ

### ระยะเวลาทดสอบ

- ทาสด้านเคมี 3-10 วันทำการ
- ทาสด้านจุลชีววิทยา 5-7 วัน กรณียื่นยื่นผลทดสอบ 14 วัน (ขึ้นอยู่กับรายการวิเคราะห์)

### ปริมาณตัวอย่างที่ใช้ทดสอบ

- ปริมาณตัวอย่างที่ใช้ทดสอบ 300-500 กรัม/ถย. ขึ้นอยู่กับจำนวนรายการทดสอบ
- Nutrition Labelling ปริมาณตัวอย่างอย่างน้อย 14 หน่วยบรรจุ หรือ นน.อย่างน้อย 1,000 กรัม/ตัวอย่าง
- Pesticide residues ปริมาณตัวอย่างอย่างน้อย 1,000 กรัม/ตัวอย่าง

### วิธีการชำระค่าบริการ

- ชำระเป็นเงินสด
- กรณีจ่ายเป็นเช็ค โปรดส่งจ่ายเช็คติดพร้อมด้วย "A/C PAYEE ONLY" ในนาม "อุตสาหกรรมพืชนามูลนิธิเพื่อสถาบันอาหาร"
- โอนค่าบริการเข้าบัญชี "อุตสาหกรรมพืชนามูลนิธิเพื่อสถาบันอาหาร" ธนาคารกรุงไทย จำกัด (มหาชน) สาขาพระปิ่นเกล้า บัญชีออมทรัพย์ เลขที่บัญชี 031-1-52938-0 และเพิกษ์ใบนำฝากที่หมายเลข 0-2886-8107 (แผนกบัญชีและการเงิน)

### วิธีการนำส่งตัวอย่างวิเคราะห์

- นำส่งตัวอย่างที่สถาบันอาหาร ห้องปฏิบัติการทดสอบ ชั้น 2 เวลาทำการ 8.30-17.30 น. วันจันทร์-วันศุกร์ (หยุดวันเสาร์-อาทิตย์ และวันหยุดราชการ)
- บริการรับตัวอย่าง โรงงานสถาบันอาหารล่วงหน้าอย่างน้อย 1-2 วัน โทร.0-2886-8088 ต่อ 5301-5305 พร้อมนำส่งแผนที่มายัง 0-2883-5021
- นำส่งตัวอย่างทางไปรษณีย์ จ่าหน้าถึง "สถาบันอาหาร ฝ่ายบริการห้องปฏิบัติการ 2008 ซ.อรุณอมรินทร์ 36 ถ.อรุณอมรินทร์ แขวงบางยี่ขัน เขตบางพลัด กรุงเทพฯ 10700"
- นำส่งตัวอย่างทางบริษัทขนส่ง/รถตู้ โรงงานสถาบันอาหารเพื่อรับตัวอย่างที่ บริษัทขนส่ง/รถตู้ โทร.0-2886-8088 ต่อ 5301-5305

### สามารถสอบถามข้อมูลเพิ่มเติมได้ที่

สถาบันอาหาร ฝ่ายบริการห้องปฏิบัติการ  
โทรศัพท์ : 0-2886-8088 ต่อ 5301-5305  
โทรสาร : 0-2883-5021