

## FACILITIES

Bio Synergy Laboratories is equipped with a number of latest and advanced equipment, and is capable of performing most of the analysis. Some of the equipments are as below:

- Triple Quadrupole LC-MS/MS System
- Triple Quadrupole GC-MS/MS System
- Inductively Coupled Plasma-Mass Spectrometer (ICP-MS)
- High Performance Liquid Chromatography (HPLC-UV-DAD/RI/Fluorescence/ELSD)
- Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES)
- Atomic Absorption Spectroscopy (AAS) with hydride generation
- Real Time - Polymerase Chain Reaction (RT - PCR)
- Gas chromatography - MS / FID / ECD / Headspace / Purge & Trap
- Automated Kjelttec Distillation Unit
- Total Organic Carbon (TOC) Analyzer
- Pour & Cloud Point Tester
- KF Titrator & Coulometer
- Oxidation Stability Tester
- Automated CFPP Tester
- FTIR Spectrophotometer
- UV-VIS Spectrometry
- Ion Chromatography
- Viscometer
- many more.....





## CHEMICAL TESTING

### • Food Testing

Bio Synergy Laboratories chemists have significant experience in helping clients meet new Malaysia Standards. We are accredited by Department of Standard Malaysia under ISO 17025 for analysis of mandatory nutritional parameters. The laboratory is also capable of testing food and beverage products labeling requirements in other jurisdictions.

- **Nutritional Labeling Analysis**  
According to USFDA, UK, China, Singapore, Malaysia Formats
- **Vitamins / Minerals**  
Vitamin A, B Complex, C, D, E, K, Sodium, Potassium, Magnesium, Iron, Zinc Phosphorus etc.
- **Heavy Metal Test / Minerals Test**  
Lead, Arsenic, Mercury, Cadmium, Copper, Tin, Antimony, Chromium etc.
- **Sugar Profile**  
Glucose, Maltose, Fructose, Lactose, Sucrose etc.
- **Colourant**  
Synthetic Colourants, Sudan 1, 2, 3 & 4, Para Red, Rhodamine B etc.
- **Food Additives**  
Benzoic Acid, Sorbic Acid, Sulphur Dioxide, Propionic Acid, Boric Acid, Sodium Chloride etc.
- **Antibiotic/ Toxin**  
Chloramphenicol, Nitrofurantoin (AOZ, AMOZ, SEM and AHD), Beta-Agonist, Histamine, Tetracycline, Chlorotetracycline, Oxytetracycline, Doxytetracycline, Aflatoxin, B1, B2, G1, G2, PSP, ASP, DSP, NSP, 3- MCPD, Malachite Green, Leucomalachite Green, Crystal Violet, Leucocrystal Violet, Fluoroquinolones, Phthalate Esters, Melamine, Acrylamide, Bisphenol A etc.

## Water Quality and Effluent

We also provide the analysis on Effluent Analysis which is required to fulfill the local and international regulations. On top of this, we are capable to analyze variety of water samples including drinking water, mineral water, river water, swimming pool water, cooling tower water, boiler water and fish pond water.

- **Effluent Analysis**  
According to:- Environmental Quality (Industrial Effluent) Regulation, Environment Quality (Sewage) Regulation, etc.
- **Drinking Water**  
According to:- 25th Schedules, Standard For Package Drinking Water & Vended Water, Food Act 1983, 25th A Schedules, Standard For Water, Food Act 1983, Singapore Environment Public Health Act For Drinking Water Quality Standard, WHO, etc.
- **Mineral Water**  
According to:- 26th Schedules Standard For Natural Mineral Water. Food Act 1983.
- **Other Water Analysis**  
Total Organic Carbon, Pesticide Residue, Polycyclic Aromatic Hydrocarbons (PAH), VOC, Dioxin.
- **Bacteriological Standard**  
Total Coliform, Escherichia coli, Fecal Streptococci, Pseudomonas aeruginosa, Clostridium perfringens, Sulphite Reducing Anaerob.

## • Microbiological Examination

Bio Synergy Laboratories microbiological team can offer microbiological examination according to international Standard which include Australian Standard, BP, USP, FDA-BAM and APHA standard. Besides, we also offer certain microbiological examination using RT-PCR (Real Time-Polymerase Chain Reaction) technique.

- |                          |                            |                                  |                         |
|--------------------------|----------------------------|----------------------------------|-------------------------|
| 1. Total plate count     | 6. Escherichia coli        | 11. Vibrio parahaemolyticus      | 16. Bacteria endotoxins |
| 2. Staphylococcus aureus | 7. Bacillus cereus         | 12. Vibrio cholera               | 17. Howard mould count  |
| 3. Salmonella            | 8. Clostridium perfringens | 13. Vibrio vulnificus            | 18. Shigella            |
| 4. Yeast & mould         | 9. Clostridium botulinum   | 14. Sulphite reducing clostridia | 19. Campylobacter       |
| 5. Coliforms             | 10. Pseudomonas aeruginosa | 15. Listeria monocytogenes       | 20. Enterbacteriaceae   |







## FOOD SAFETY

### **HALAL VERIFICATION TEST**

Food authenticity & food adulteration is a major concern especially in particular communities such as the muslims & vegetarians. In islam, muslims are prohibited from consuming food containing porcine sources. Thus, detection of porcine derivatives in food is crucial for Halal product. Bio Synergy Laboratory offers Real Time-Polymerase Chain Reaction (RT-PCR) technology to detect the porcines sources. Another primary test is the alcohol test, which is analyzed using gas chromatography with headspace sampler.

### **GENETICALLY MODIFIED ORGANISMS (GMO)**

The adventitious presence of transgenic events in seeds, grains and processed foods has been a concern for agriculture and food supply chain production. Determining the extent of GMO contamination in the food supply chain requires a representative sample, knowledge of the process and use of the product, and meticulous sample handling and testing.

Bio Synergy Laboratories helps companies sustain and expand their global markets by providing accurate and reliable DNA testing for GMOs in grain and food products. We are using Real Time-PCR based DNA detection technology to determine the present of GMO in sample.

### **ALLERGEN**

Each year, millions of people have allergic reactions to food. Although most food allergies cause relatively mild and minor symptoms, some food allergies can cause severe reaction, and even be life-threatening.

While more than 160 foods can cause allergic reactions in people with food allergies, the law identifies the eight most common allergic foods:

- |  |   |
|--|---|
| 1. Milk  | 5. Tree Nuts (e.g.: almonds, walnuts, pecans) |
| 2. Eggs  | 6. Peanuts                                    |
| 3. Fish (e.g.:bass, flounder, cod)                   | 7. Wheat                                      |
| 4. Crustacean shellfish (e.g.:crab, lobster, shrimp) | 8. Soyabeans                                  |

Bio Synergy Laboratories have the comprehensive testing instruments and experience necessary to serve your complete testing needs. Our team of professional chemist, microbiologist and technical staff can assist you meeting your requirement.







## BIO SYNERGY Laboratories

### • PHARMACEUTICAL / COSMETIC PRODUCT TESTING

We provide the pharmaceutical and cosmetic products safety assessment and stability studies in compliance with the regulations.

- **Preservative**  
*Methylparaben, Propylparaben, Methylisothiazolinone, Salicylic Acid, Triclosan.*
- **Restricted Substances**  
*Hydroquinone, Hydroquinone Monomethylether, Hydroquinone, Monoethylether, Hydroquinone Monobenzelether, Formaldehyde, Retinoic Acid.*
- **Physical Test**  
*pH, Disintegration, Density, Friability, Viscosity, Bulk Density, Hardness.*
- **Adulterant**  
*Sildenafil, Vardenafil, Tadalafil, Melamine, Steroid, Sibutramine etc.*
- **Herbal Active Ingredient**  
*Tongkat Ali, Ganoderma, Hempeedu Bumi, Aloe Vera, Cordyceps Sinensis, Lovastatin.*
- **Preservative Challenge Test /Anti-Microbial Activity Assessment / Stability Study / Shelf-life Study**

### • Pesticides & Mycotoxins

Pesticides are a vital part of the agriculture industry, assisting growers in meeting world food demands. However, due to negative impacts on human and animal health as well as ecological effects of pesticides and contaminants, it is not desirable to find residues of those chemicals pesticides in food of feed after it is harvested and headed for human or animal consumption.

Bio Synergy pesticide residue services include testing for insecticides, herbicides, and fungicides in the following classes :

- |                  |                   |                           |                         |
|------------------|-------------------|---------------------------|-------------------------|
| • Acetamides     | • Imidazolinones  | • Organitrogens           | • Phenylurea herbicides |
| • Carbamates     | • Nicotinoids     | • Organophosphates        | • Pyrethroids           |
| • Dicarboximides | • Organochlorines | • Phenoxy acid herbicides | • Triazines / Triazoles |

Bio Synergy utilizes specialized equipment including LC-MSMS (Liquid Chromatography with Tandem Mass Spectrometry) and GC-MS (Gas Chromatography with Mass Spectrometry) to screen for more than 300 pesticides.

Mycotoxins are secondary metabolites produced by fungi which contaminate crops and feed products. High levels of mycotoxins in food, pet food and livestock feed can be detrimental to the health of humans and animals. Testing of feed and food materials is necessary to keep these products safe, and many countries have set standards to control the levels of mycotoxins.

Common Mycotoxins :

- |                                     |              |               |
|-------------------------------------|--------------|---------------|
| • Deoxynivalenol (DON) Or Vomitoxin | • Fumonisin  | • Zearalenone |
| • Aflatoxin (B1, B2, G1, G2, M1)    | • Ochratoxin | • T-2 Toxin   |

Bio Synergy Laboratories utilizes both validated ELISA (Enzyme Linked Immunosorbant Assay) testing methods and LC MSMS (Liquid Chromatography with Tandem Mass Spectrophotometry) for mycotoxin analysis, depending on the level of detection and quantification needed.

### • Oil & Fuel Testing

Bio Synergy Laboratories also provides the complete testing services for biodiesel fuel & other alternative fuel manufactures. Calcium & Magnesium combined, Water & Sediment, Kinematic Viscosity, Sulfated Ash, Moisture and Volatile Matter, Methanol content, Flash Point, Cloud Point, Pour Point, Impurities, Sulfur, Copper Strip Corrosion, Cetene Number, Peroxide Value, Acidity, Carotene Content, Unsaponifiable Matter, Phosphorus, Chromium, Copper, iron, Nickel and Manganese, Sodium & Potassium combined, Soap content, Saponification Value, Iodine Value, Fatty Acid Composition, Free & Total Glycerin, Ash, Total Fatty Matter, Total Saponifiable Matter, Oxidation Stability, Esther Content, Linoleic Acid Methyl Esther, Polyunsaturated, CFPP, Mono-, di-, tri-glyceride, etc.

### Slimming Agents :

Sibutramine & analogue,  
Phentermine,  
Fenfluramine



### Steroids Group :

Dexamethasone, Betamethasone,  
Prednisolone, Prednisone, Cortisone,  
Hydrocortisone, Triamcinolone etc.



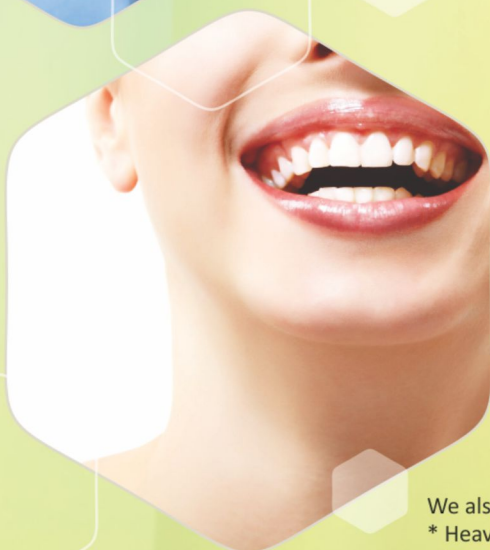
### Men Health Screening :

Sildenafil, Vardenafil, Tadalafil,  
Udenafil & analogue



### Antidiabetic Screening :

Metformin, Glipizide,  
Glibenclamide,  
Gliclazide



### Non Steroidal Anti Inflammatory Drugs (NSAIDs) :

Ibuprofen, Diclofenac, Paracetamol, Sulindac,  
Ketoprofen, Piroxicam, Indomethacin, Naproxen,  
Mefenamic acid, Phenylbutazone, etc.

### Whitening Agents :

Hydroquinone, Tretinoin

We also offer the tests for pharmaceutical / cosmetic products:

- \* Heavy Metal test (Hg, Pb, As, Cd, Cu) using AAS, ICP, ICP-MS, based On BP/USP methods
- \* Microbiological Tests (TMAC, TYMC, Bile-tolerant Gram Negative Bacteria, E.coli, Salmonella, Staphylococcus aureus, Pseudomonas aeruginosa, Clostridia spp., Candida albicans, Burkholderia cepacia) using BP2013 methods
- \* Disintegration \* Dissolution \* Uniformity of Weight etc



## FATS & OILS AND ITS BY PRODUCTS TESTING

The production of fats and oils for food and non-food uses has increased rapidly over the past 20 years. Different indicators parameters are used to access the quality of fats and oils. With cutting edge technology and the latest testing methods, Bio Synergy Laboratory are fully equipped to meet your testing needs.

### ***Pesticides Testing According to:*** **\* Malaysia Food Act 1983**

2, 4-D, Acephate, Ametryn, Butacarbim, Captan, Chlorpyrifos, Cinosulfuron, Cyhalothrin, Cypermethrins (sum of isomers), Cyproconazole, Deltamethrin (sum of isomers), Dicamba, Difenconazole, Dithiocarbamates (expressed as CS<sub>2</sub>), Mancozeb, Maneb, Propineb, Thiram, Zineb, Ziram, Diuron, DSMA, Fluzitop-butyl, Fluroxypyr, Furathiocarb, Glufosinate Ammonium (sum of glufosinate and 3-hydroxy methyl phosphinyl propionic acid, express as glufosinate free acid), Glyphosate, Imazapyr, Imazethapyr, Methamidophos, Methidathion, Metsulfuron Methyl, Monocrotophos, MSMA, Paraquat, Sethoxydim, Triclopyr, DSMA

**\* EU Guidelines** (Chlorine/Nitrogen/Phosphor Pesticides/Pyrethroids)

### ***Polycyclic Aromatic Hydrocarbon (PAH)***

Naphthalene, Acenaphylene, Acenaphthalene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenzo(a,h)anthracene, Benzo(ghi)perylene, Indeno(1,2,3-cd)pyrene.

### ***Dioxin & Dioxin likes PCB, Furan***

2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 1,2,3,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,4,6,7,8-HpCDD, OCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDF, PCB28, 52, 77, 81, 101, 106, 114, 118, 123, 126, 138, 153, 156, 157, 167, 169, 180, 189.

### ***3-MCPD Esters & Glycidyl Esters***

[ LC-MS/MS (Direct Method) & GC-MS/MS (Indirect Method) ].

### ***Trace Metals By ICP-MS***

Arsenic, Mercury, Iron, Nickel, Phosphorus, etc

Arcylamide, Monoglycerides, Diglycerides, Triglycerides Profiling, Fatty Acid Composition, Erucic Acid, Antioxidant (BHT, BHA, TBHQ, PG), Rancidity, Trace Metals, Flash Point, Cloud Point, FFA, PV, IV, DOBI, Anisidine Value, Moisture & Volatile, Saponification Value, Slip Melting Point, Mineral Oil, Refractive Index, Specific Gravity etc.

Testing Parameters according to China Entry-Exit Inspection & Quarantine Bureau (CIQ), palm Oil Refines Association of Malaysia (PORAM), STC, GCP, SAVOLA, etc

Soap: Moisture & Volatile, Total Fatty Matter, Alcohol Soluble & Alcohol Insoluble, Water Insoluble, Total Alkalinity, Free Acid & Free Alkali etc

Biodiesel: Testing Parameters according to ASTM 6751 & EN14214







## SEAFOOD TESTING

Bio Synergy Laboratories offers a wide range of testing services to support the seafood safety initiatives, from hatchery, aquaculture farmer, processor to importer. This will protect your company from costly and image damaging and recalls. Further more, your business risk can be reduced by meeting regulatory requirement and standard, in the mean time increase the quality and safety of your products and processes.

Industrial and environmental pollutants may be present in seafood. These pollutants can cause health hazards such as food poisoning when consumed. As result of both increasing imports of seafood and the growing regulation and enforcement of quality standards, food safety testing of seafood has become a vital issue to government agencies, retailers and consumers.

### • **Microbiological Examination**

Aerobic Plate Count, Coliform, E.coli, Coagulase-positive Staphylococci, Salmonella, Listeria monocytogenes, Clostridium perfringens, Clostridium botulinum, Vibrio cholerae, Vibrio parahaemolyticus, Vibrio vulnificus.

### • **Chemical Analysis**

#### (I) *Drugs Residues*

Steroids, Stilbenes, Chloramphenicol, Nitrofurans (AOZ, AMOZ, SEM, AHD), Nitroimidazole (DMZ, MPZ, IPZ, RNZ, DMZ-OH, MDZ-OH), Antibacterial (Sulfonamide group, Oxolinic Acid, Fluoroquinolone group, Tetracyclines group, etc), Anthelmintics, Dyes-Malachite Green, Leucomalachite Green, Crystal Violet, Leucocrystal Violet.

#### (II) *Contaminants*

Organochlorine Pesticides, PolyChlorine Buphenyls (PCB), Dioxin, Poly Aromatic Hydrocarbon Heavy Metal (Lead, Arsenic, Mercury, Cadmium, Chromium, Nickel, Tin etc), Mycotoxin (Aflatoxin B1, B2, G1, G2), Histamine.

#### (III) *Additives*

Benzoic Acid, Sorbic Acid, Melamine, Polyphosphates, Sulphites, Formaldehyde, Boric Acid.

### • **Marine Biotoxins**

- PSP, DSP, ASP, NSP

### • **Crustacean Disease**

- White Spot Syndrome Virus (WSSN)
- Taura Syndrome Virus (TSV)
- Yellow Head Disease Virus (YHV)
- Infectious Hyperdermal & Haematopoietic Necrosis Virus (IHHNV)
- Infectious Myonecrosis Virus (IMNV)

### • **Water & Ice Check Monitoring**

#### (I) *Physical Standard*

Colour, Turbidity

#### (II) *Chemical Stand*

pH, Aluminium, Ammonia, Anionic Detergent, Arsenic, Total Biocides, Cadmium, Carbon Chloroform Extract, Chloride, Chloform, Chromium, Copper, Cyanide, Floride, Hardness, Iron, Lead, Magnesium, Manganese, Mercury, Mineral Oil, Nitrate, Phenol, Selenium, Silver, Sodium, Sulphate, Zinc and Free Residual Chlorine.

#### (III) *Pesticides*

Aldrin /dieldrin, Chlordance, 2,4-D, DDT, Heptachlor & Heptachlor Epoxide, Hexachlorobenzene, Lindane, Methoxychlor.

#### (IV) *Bacteriological Standard*

Coliform and Escherichia coli.

#### (V) *Radioactivity*

Gross Alpha, Gross Beta.







## OCCUPATIONAL HEALTH & SAFETY CONSULTATION ENVIRONMENTAL MONITORING

BIO SYNERGY Laboratories provide a full range of services to support regulatory programmes on occupational safety and health and also the environmental monitoring i.e. USECHH 2000, Factories & Machinery Act 1967, Environmental Quality Act (Clean Air) and Regulations 1978.

### Chemical Health Risk Assessment (CHRA)

A comprehensive assessment of the risk exposure of employees to hazardous chemicals in the workplaces in compliance with USECH Regulations 2000 under OSHA 1994.

### Occupational Hygiene Monitoring

Monitoring of employee's exposure to hazardous chemicals performed by Hygiene Technician registered with DOSH, in compliance with USECHH Regulations 2000, Regulation 26.

### Local Exhaust Ventilation (LEV) Inspection

In compliance with USECHH Regulations 2000, where the LEV system (eg. Exhaust, chimney fume hood) is inspected by Hygiene Technician yearly.

### Noise Exposure Monitoring

In compliance with Factories and Machinery Act 1989, employers are required to perform health risk assessment on employee due to noise exposure in the workplace.

### Indoor Air Quality (IAQ)

In compliance with Code of Practice 2005 by DOSH, indoor air quality of non-industrial environment recommends to be monitored and reported.

### Stack Emission Monitoring

In compliance with Environmental Quality Act (Clean Air) and Regulations 1978, employers are required to submit air emission data to regulatory bodies or local authorities.

### Industrial Effluent & Scheduled Waste

## FAILURE/ CONTAMINATION ANALYSIS & GREEN PRODUCT TESTING

Failure analysis includes the process of collecting and analyzing data to determine the root cause of failure that may be caused by contamination. These sources of contamination may come in the form of solvent, lubricants, adhesives etc. With our experienced and competent team at hand, we work together in investigative measures and solutions. Analytical services provided and tools used include FTIR, IC, GCMS, ICPMS.

### Restriction of Hazardous Substances (ROHS) Compliance Analysis

In compliance with European Union regulations, substances such as Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs and PBDEs are strongly regulated to ensure safety.

### Registration, Evaluation, Authorisation and Restriction of Chemical (REACH) Compliance Analysis

REACH is an European Community Regulation on Chemicals and their safe use. The aim of REACH is to improve the protection of environment and human health through preventive measures and early detection of intrinsic properties of chemical substances.

