



Tti Testing Laboratories

OVER 30 YEARS OF EXCELLENCE IN QUALITY ASSURANCE



COMPREHENSIVE TESTING SOLUTIONS

Pharmaceutical **testing** services

From raw material to shelf life, in one accredited laboratory.

We test medicines, nutraceuticals, cosmetics and medical devices to internationally recognised methods. Nitrosamines, DEG/EG, sterility and endotoxins are on our accredited scope.



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- 07 Nutraceutical
- 08 Cosmeceutical
- 09 Medical devices

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www.ttilabs.net



PNAC ACCREDITED SCOPE

Tti Labs' ISO/IEC 17025 scope covers nitrosamine (NDMA/NDEA), DEG/EG, sterility and endotoxin tests.

PNAC LAB 022, Rev. 09: Pharma & Cosmeceutical Products field.

COMPANY OVERVIEW

One of Pakistan's largest independent laboratories.

Independent since 1995, testing for ten sectors, with personalised service, technical support and flexible QA/QC solutions.

600⁺

SAMPLES A DAY

1,500⁺

TESTS A DAY

544ACCREDITED
METHODS**378**ACCREDITED
PARAMETERS**150⁺**PHARMA
CLIENTS**25,000**SQ FT
FACILITY

SECTORS SERVED

- Pharmaceutical
- Nutraceutical
- Cosmeceutical
- Chemical
- Surgical & medical devices
- Food & agriculture
- Textiles & apparel
- Petroleum
- Sustainability
- Personal protective equipment (PPE)

Pharma-
ceuticalNutra-
ceuticalCosme-
ceuticalMedical
devices



ISO/IEC 17025 • ISO/IEC 17020

Accredited by PNAC since 2006. Recognised by CPSC, EPA, OGRA and IAC.

PNAC accredits Tti Labs as a testing laboratory (LAB 022) and Tti Inspections Pvt Ltd as an inspection body (IB-006). LAB 022 was first granted in 2006 and runs to August 2027.

- ISO/IEC 17025 accredited testing laboratory
- ISO/IEC 17020 accredited inspection body
- U.S. CPSC accepted conformity assessment body
- EPA certified laboratory
- PSQCA approved inspection agency
- OGRA approved testing laboratory
- U.S. IAC certified microbiology laboratory
- Approved by all provincial food authorities for a wide range of test parameters
- Approved by the National Disaster Management Authority and the Punjab Disaster Management Authority

SALIENT FEATURES



3-day turnaround



On-demand R&D and
new method
development



Personalised
customer services



Online reporting
dashboard



Offices in Lahore,
Karachi, Sialkot and
Faisalabad

SPECTROMETRY • CHROMATOGRAPHY • BIOLOGICAL & SPECIALISED APPARATUS

15 technologies in four families.

From ICP-MS to RT-PCR, each instrument runs a scientifically validated method, so results are accurate, reliable and reproducible.

The lab supports quality control, method development and validation, product development and regulatory compliance. It tests raw materials (APIs and excipients), in-process materials, packaging materials, finished products and R&D samples.

SPECTROMETRY & SPECTROSCOPY

ICP-OES

Inductively coupled plasma-optical emission spectrometry

ICP-MS

Inductively coupled plasma-mass spectrometry

AAS

Atomic absorption spectroscopy

FTIR

Fourier transform infrared spectroscopy

GAS CHROMATOGRAPHY

GC-EI/CI-MS

Gas chromatography-electron ionisation/chemical ionisation-mass spectrometry

GC-MS/MS

Gas chromatography-tandem mass spectrometry

HS-GC-MS

Headspace gas chromatography-mass spectrometry

GC-FID

Gas chromatography with flame ionisation detection

LIQUID CHROMATOGRAPHY

LC-MS/MS

Liquid chromatography-tandem mass spectrometry

LC-MS

Liquid chromatography-mass spectrometry

HPLC

High-performance liquid chromatography with UV/Vis and diode array (DAD) detectors

TLC

Thin layer chromatography

BIOLOGICAL & SPECIALISED APPARATUS

Dissolution

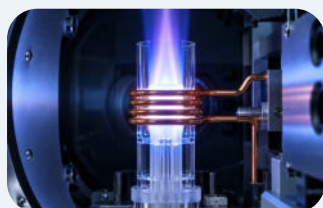
Dissolution testing apparatus

ELISA

Enzyme-linked immunosorbent assay

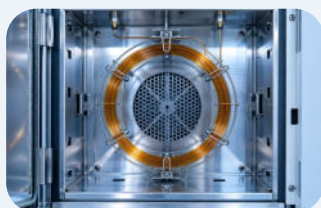
RT-PCR

Real-time polymerase chain reaction



Spectrometry

ICP-OES



Gas chromatography

GC-MS/MS



Liquid chromatography

HPLC



Biological apparatus

RT-PCR

MANUFACTURERS • EXPORTERS • IMPORTERS

Nitrosamines, DEG/EG and heavy metals, tested to FDA and USP methods.

Analytical and microbiological testing for manufacturers, exporters and importers, for quality control and regulatory compliance in local and international markets.

CORE ANALYTICAL CAPABILITIES

DETERMINATION OF	TECHNIQUE	METHOD
NDMA/NDEA	LC-MS/MS	US FDA FY20-058-DPA-S
	GC-MS/MS	US FDA FY18-176-DPA-S
DEG/EG	GC-FID	USP
Heavy metals	ICP-OES	As per requirement
	ICP-MS	As per requirement

RAW MATERIALS • IN-PROCESS • FINISHED
PRODUCTS • R&D

Six product forms, from raw material to injectable.

We test raw materials, in-process materials, R&D samples and finished products, and validate and verify methods and products.



Raw materials

APIs and excipients



Tablets & capsules

Finished product, solid



Syrups & suspensions

Finished product, liquid



Powders

Finished product, powder



Gels & creams

Finished product, semi-solid



Injectables

Finished product, sterile



Product assays on our PNAC scope: paracetamol (BP monograph, UV); metronidazole (USP monograph, HPLC); iron and sodium (USP monograph, AAS); NaCl content and weight variation (USP-NF); pH of Lactated Ringer's Injection; endotoxin to USP <85> and <161>.

Also: we test in-process materials and R&D samples, and validate and verify methods and products.

PHARMACEUTICAL TESTING SERVICES • 01-04

26 tests in four families.

TESTS PER FAMILY

Impurities & contaminants	9
Microbiology	9
Assay	4
Physicochemical	4

01 API & product assay

- Assay/purity
- Qualitative and quantitative analysis by liquid and gas chromatography
- Spectrophotometric identification
- FTIR material identification

03 Impurities & contaminant testing

- DEG/EG detection in solvents
- Nitrosamines (NDMA/NDEA) detection
- MeNP detection
- Volatile organic compounds (VOCs)
- Organic impurities of APIs
- Phthalates
- Phenols & alkylphenols/APEOs
- Chlorophenols & chlorinated compounds
- Polycyclic aromatic hydrocarbons (PAHs)

02 Physicochemical characterisation

- pH analysis
- Moisture content
- Colour, odour & texture analysis
- Viscosity

04 Pharmaceutical microbiological testing

- Pathogens detection
- Microbial limit test (MLT)
- Sterility testing
- Bacterial endotoxin testing (LAL)
- Bioburden testing
- Antimicrobial/disinfectant efficacy testing
- Preservative efficacy testing (PET)
- Environmental monitoring
- Swab testing for microbial contamination



FTIR

Material identification



Nitrosamines (NDMA/NDEA)

US FDA FY20-058-DPA-S • FY18-176-DPA-S



Microbial limit test

USP <61> • <62>



Sterility testing

USP <71>

TESTING SERVICES • 05-12

From method validation to shelf life.

Beyond routine tests: residual solvents, method development, packaging compatibility, stability, dissolution, elemental impurities and shelf life.

05 • RESIDUAL SOLVENTS & CHEMICAL RESIDUES

- Residual solvents analysis, ICH Q3C (R8) compliant

06 • METHOD DEVELOPMENT & VALIDATION

- Analytical method development
- Method verification studies
- Method validation

07 • PACKAGING & CONTAINER COMPATIBILITY

- Extractables & leachables studies
- Glass delamination testing
- Packaging interaction studies
- Container closure integrity testing (CCIT)
- Sterile packing test

08 Real-time & accelerated stability studies

09 Comparative dissolution profiling (CDP)

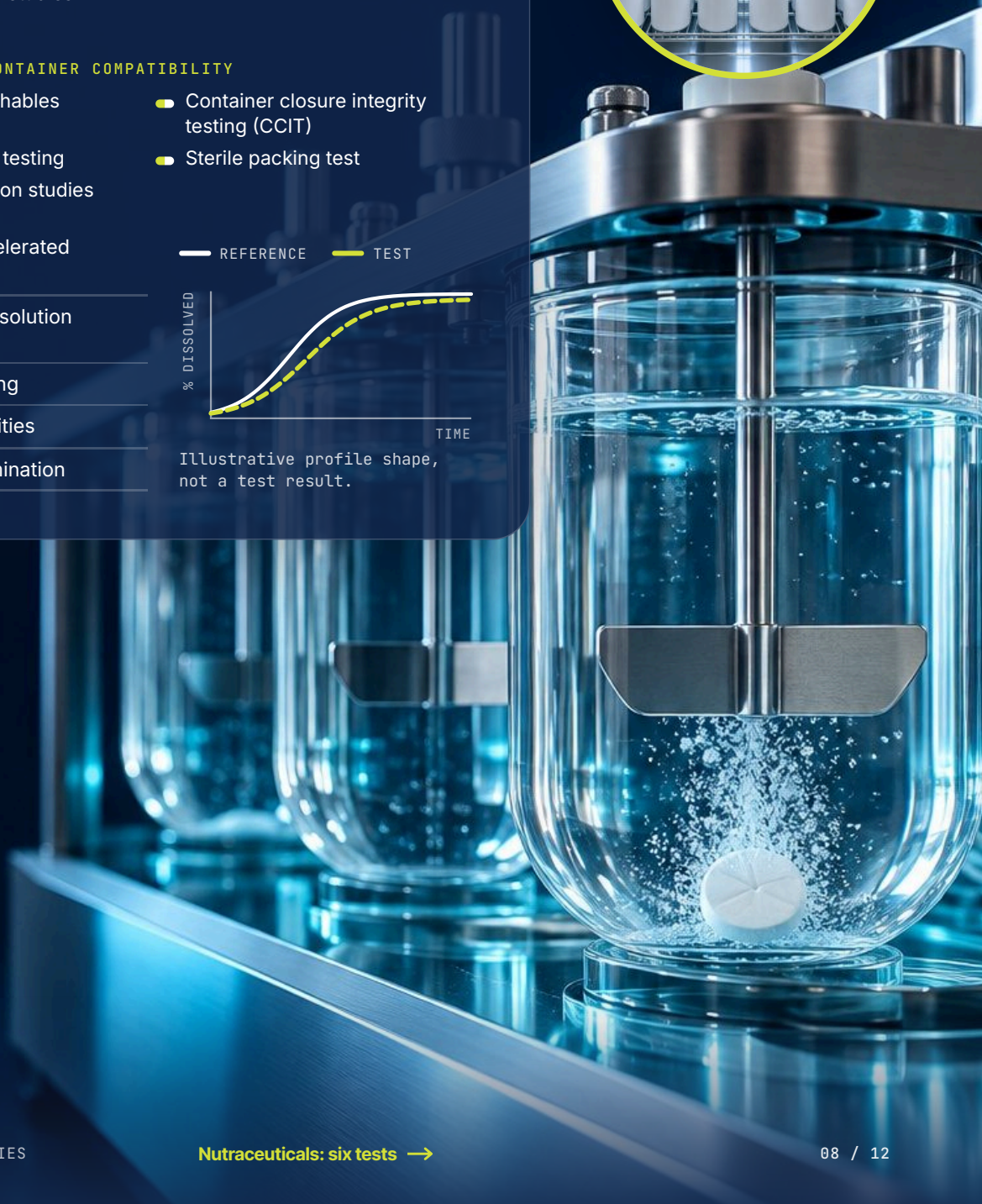
10 Dissolution testing

11 Elemental impurities

12 Shelf-life determination



Illustrative profile shape, not a test result.



NUTRACEUTICALS

Six tests for safety, purity and nutrition.

Vitamins, minerals, fatty acids and heavy metals, measured by reliable analytical methods that support compliance.

**Vitamins & minerals estimation**

01

**Fatty acid profiling**

02

**Nutritional profiling**

03

**Microbiological testing**

04

**Analysis of henna**

05

**Heavy metals detection**

06





COSMETICS • DERMATOLOGICAL PRODUCTS •
PERSONAL CARE

Four test families, from skin safety to SPF.

Cosmetics, dermatological products and personal care formulations, tested to international quality and safety standards.



A Safety & toxicological assessment

Checks cosmetic products for potential irritation, allergenicity and toxicological risk.

- Skin irritants, allergens & toxicology
- IFRA allergen testing
- Phthalates detection
- Heavy metals analysis



B Chemical composition & actives analysis

Identifies and quantifies active ingredients, fragrances and formulation components.

- Active ingredients analysis (vitamins, minerals & antioxidants)
- Menthol analysis
- Fragrance & volatile components (GC-MS analysis of perfumes)
- Henna & hair dye purity (PPD content, heavy metals)



C Physicochemical characterisation

Measures the formulation properties that affect product stability and user experience.

- pH, viscosity & texture analysis
- Colour stability & oxidation testing (makeup)



D Product performance & functional testing

Verifies product claims and real-world performance.

- SPF testing (sunscreens & sunblock)
- Foaming & cleansing efficacy (soaps, face washes)
- Free caustic alkali



Complete microbiological testing of cosmetics and skin care products.

Methods on Tti Labs' PNAC scope include ISO 21149, ISO 22717, ISO 22718, ISO 18416 and ISO 21150.



SURGICAL & MEDICAL DEVICES

Medical devices, tested from sterility to strength.

Four test families for surgical products and medical devices: sterility, material safety, packaging and performance.

Surgical instruments

Syringes & needles

Catheters

Implants

Surgical gloves

Wound dressings

Infusion sets

Diagnostic devices

Sterility & microbiological testing

- Sterility testing
- Bacterial endotoxin (LAL) testing
- Bioburden testing

Material & chemical safety

- Extractables & leachables studies
- Residual chemical analysis
- Elemental impurities/heavy metals

Packaging & sterile barrier testing

- Sterile packing test
- Container closure integrity

Performance & functional testing

- Mechanical strength testing
- Dimensional verification
- Functional performance evaluation



Tti Testing Laboratories



Every stage of your product, in one accredited laboratory.



ISO/IEC 17025 accredited

ISO/IEC 17020 inspection

Over 30 years of excellence in quality assurance

111 786 001



www.ttilabs.net
quotations@ttilabs.net
marketing@ttilabs.net

Lahore Office

Headquarters & Laboratories

347-S Quaid-e-Azam
Industrial Estate,
Kot Lakhpat, Lahore-54770

(92-42) 111 786 001

Karachi Office

3rd Floor, Plot No. 7c, Sunset
Commercial St. No. 1,
Phase 4 DHA, Karachi-75500

(92-21) 111 786 001

Faisalabad Office

Office # 145, 1st Floor
Centre Point Plaza,
Jaranwala Road,
Faisalabad-38000

(041) 8733001

Sialkot Office

Opposite Mag Town Masjid,
Kashmir Road, Sialkot-51310

(052) 3573367

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