Indonesian Association of Food Technologists

The "Heritage to Harmonization" Pipeline

Standardized Evidence as the Currency of Trust for Asian Food Industry Market Access

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Suggested Steps / Pathways

1

The Data Baseline

Map complex heritage matrices using modern metabolomics to establish a Common Minimum Data Set.

2

Capability & Trust

Train a cross-jurisdictional cohort of regulators specifically on evaluating these functional data packages.

3

Industry Validation

Launch pilot ingredients proving that batch-to-batch efficacy can survive rigorous, multi-jurisdictional review.

4

Harmonization

Validated pilots become the technical blueprint for Mutual Recognition Arrangements (MRAs), effectively dismantling bottlenecks.

Pathway 1: Honoring tradition by turning living knowledge into credible science.

Establish a "Common Minimum Data Set" using each country's Government Research funding to build multi-site evidence and reference methods for priority pilot ingredients.

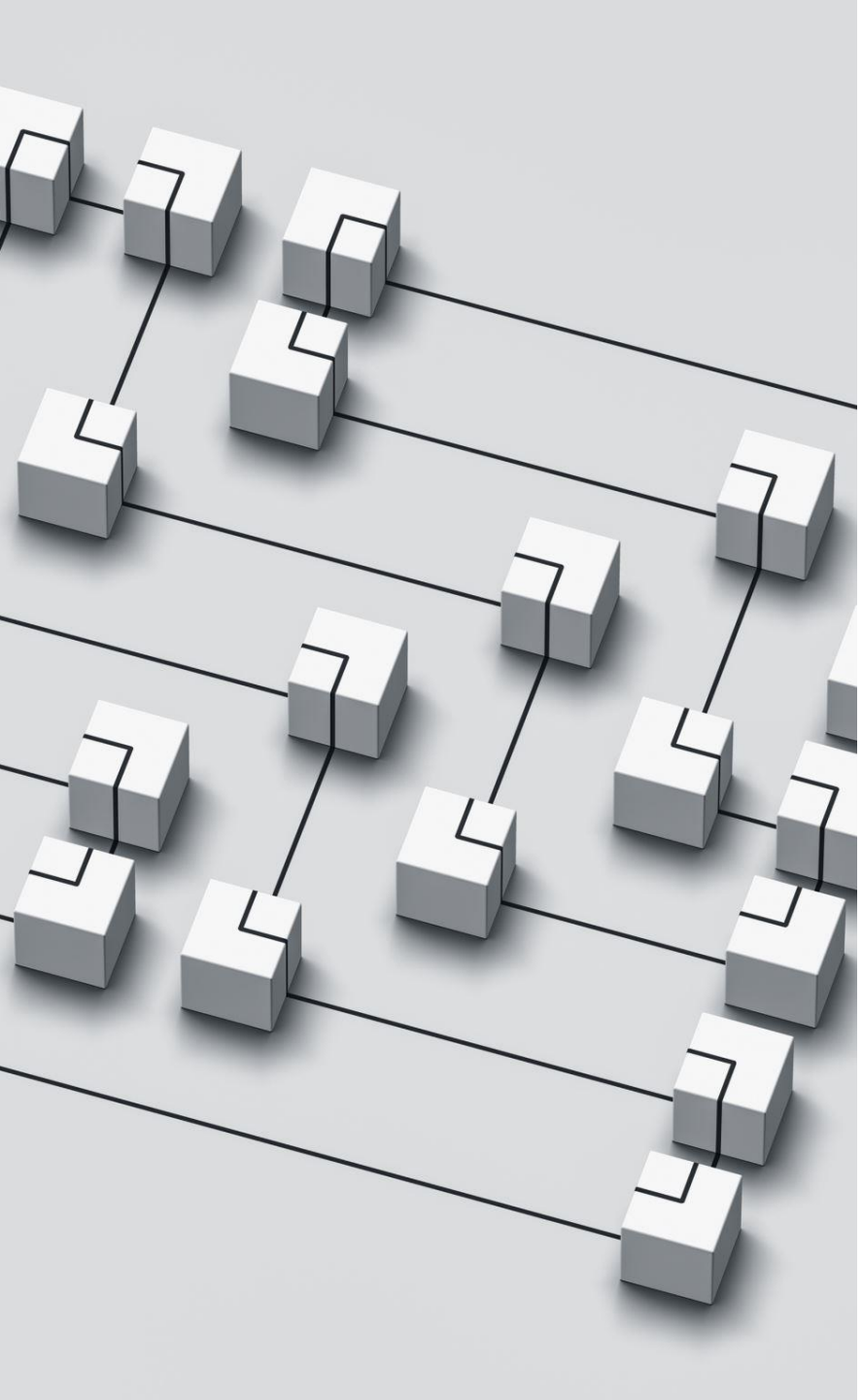
Actionable Strategy & Evidence:

- **Defeating Arbitrary Novelty Triggers:** baseline safety and efficacy using modern omics and clinical trials on heritage botanicals, utilize existing Randomized Controlled Trials to satisfy safety data requirements.

- **Standardizing Complex Matrices:** provide hard metrics for claims substantiation and standardize the data requirements for multi-herb and fermented products.

Samples of Existing “Jamu” research from Indonesia

Botanical Matrix / Formulation	Traditional Claim	Modern Evidence & Omics Validation	Efficacy & Safety Metrics	Source
Standardized Jamu Osteoarthritis Formula	Joint Pain Relief	Randomized Controlled Clinical Trial (vs. NSAID Piroxicam)	Significant VAS pain reduction ($p<0.05$); Kidney/Liver markers (SGPT, SGOT, BUN) remained in normal safe ranges.	*Health Science Journal of Indonesia*
Multi-Herb Jamu Metabolomics	General health / Antimicrobial	Machine Learning (SVM/Random Forest) applied to metabolomics	97.11% accuracy in mapping 94 herbal compounds to target proteins; identified 14 plants as validated natural antibiotics.	*Metabolomic Studies of Indonesian Jamu Medicines*
Targeted Nutrigenomics (Curcumin)	Anti-inflammatory	Transcriptomic readouts (PBMC gene expression panels)	Direct modulation of transcription factors (NF-κB, AP, STAT); shifting networks rather than single-target drug pathways.	*Nutrigenomics and Jamu: Precision, Preventive Health*



Pathway 2: Growing the people, labs, and methods that can carry the mission forward.

Deploy joint research and panel programs focused specifically on joint Regulatory Science to train a cross-jurisdictional cohort of future regulators.

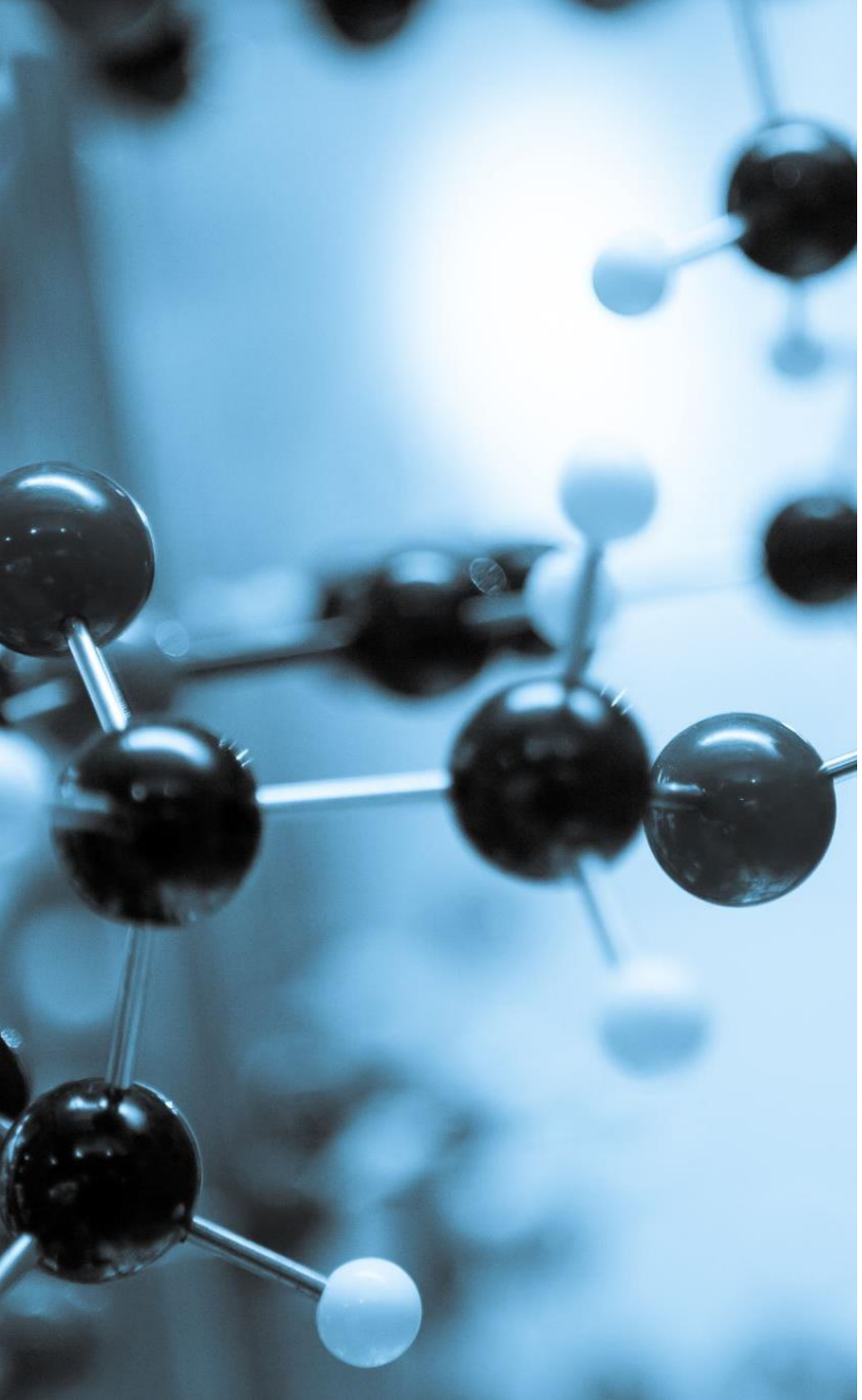
Actionable Strategy & Evidence:

- **Interpreting Advanced Evidence:** Regulators must be trained to evaluate "Asian-ready data packages, setting Machine Learning applied to metabolomics achieving acceptable accuracy in mapping herbal compounds, and assessing the functional impact of targeted bioactives.

- **Shifting the Regulatory Paradigm:** By educating regulators together, build mutual trust to transition away from immediate rejections based on the precautionary principle, moving instead toward Individually Recognized Functional Ingredients (IRFI) modeling and shared conformity assessments.

Samples of Existing bioactive research

Biomarker / Parameter	Unfermented Matrix (Soybean)	Fermented Matrix (Tempeh)	Functional Impact for Claims Substantiation	Source
Daidzein (Bioactive Aglycone)	16.72 mg / 100g	38.91 mg / 100g	**2.3x increase** in highly bioavailable antioxidant compounds post-fermentation.	*Enhancement of β-secretase inhibition and antioxidant activities of tempeh*
Genistein (Bioactive Aglycone)	11.10 mg / 100g	24.03 mg / 100g	**2.1x increase** in targeted bioactives linked to metabolic regulation.	*Enhancement of β-secretase inhibition and antioxidant activities of tempeh*
DPPH Scavenging Activity	10.00 mg / ml	2.67 mg / ml	**3.7x improvement** in free-radical scavenging potency.	*Enhancement of β-secretase inhibition and antioxidant activities of tempeh*
Cytotoxicity (MCF-7 Cell Lines)	Low / Undetectable	IC50 of 2.54 µg/mL (108-h extraction)	High presence of daidzin and genistin establishes baseline for targeted therapeutic claims.	*Isoflavones and Bioactivities in Over-fermented Tempeh Extracts*



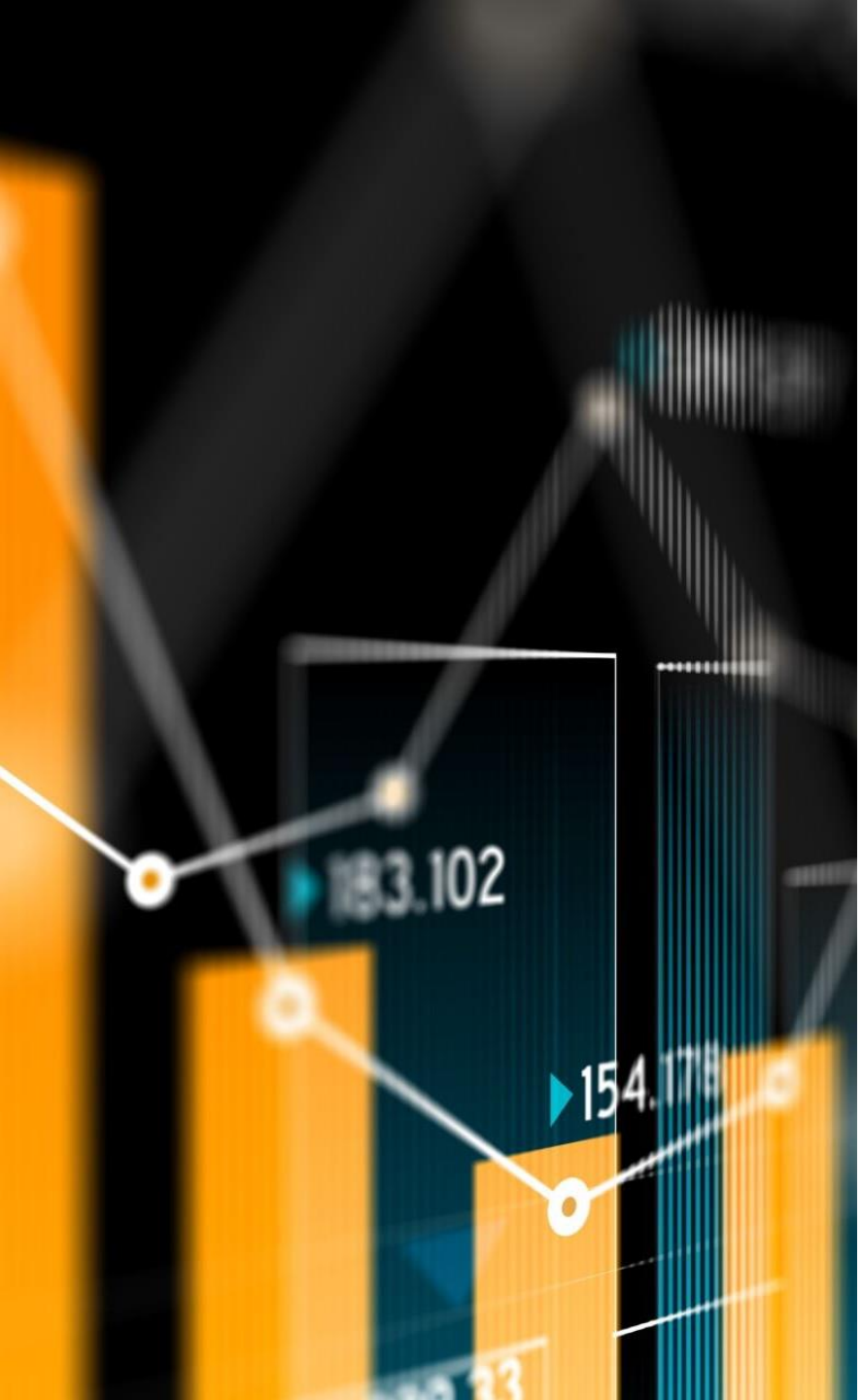
Pathway 3: Translating science into products, SMEs, exports, and community value.

Launch industry-led regulatory sandboxes utilizing robust functional food sector to prototype high-potential products with minimum viable evidence.

Actionable Strategy & Evidence:

- **Testing Harmonized Frameworks:** co-develop dossiers with SMEs that bypass fragmented national toxicity requirements by utilizing the proposed Common Minimum Data Set and standardized Supplier Declarations of Conformity (SDoC).

- **Scaling for Shared Prosperity:** prototype shelf-stable heritage foods with full traceability, proving that heritage-based innovation can survive real-world multi-jurisdictional review and create resilient value chains.



Pathway 4: Turning regulation into an enabler of safe, ethical, and innovation-ready growth.

Anchor the policy of Safe, Wholesome, and Halal directly into the 5-10 Year High-Level Roadmap to shape Asian principles for trusted food systems.

Actionable Strategy & Evidence:

- **Implementing Mutual Reliance Mechanisms:** actively advocate for the transition from isolated country dossier submissions to Mutual Recognition Arrangements (MRAs), relying on shared Good Laboratory Practice (GLP) data and cross-border conformity assessments.

- **Anchoring Regional Leadership:** drive the adoption of public registries, digital dossiers, and platform interoperability, cementing Asia as a trusted source of heritage-derived functional ingredient data.

Existing / Precedent Models

Regulatory Bottleneck	Traditional Regional Approach	The Proposed "Data-Driven" MRA Approach	Source / Precedent Model
Market Access / Pre-market Approval	Individual, isolated country dossier submissions	**Mutual Recognition Arrangements (MRA)** relying on shared Conformity Assessment results and GLP data.	*ASEAN Guidelines for the Development of MRAs*
Novelty Classification	Immediate rejection based on precautionary principle	**Individually Recognized Functional Ingredients (IRFI)** modelling; granting temporary market exclusivity for new data.	*Korean Health Functional Foods Regulatory Framework*
Safety Data Requirements	Differing, fragmented national toxicity requirements	**Common Minimum Data Set** utilizing standardized omics profiles and Supplier Declarations of Conformity (SDoC).	*ASEAN Guidelines*

5–10 Year High-Level Roadmap

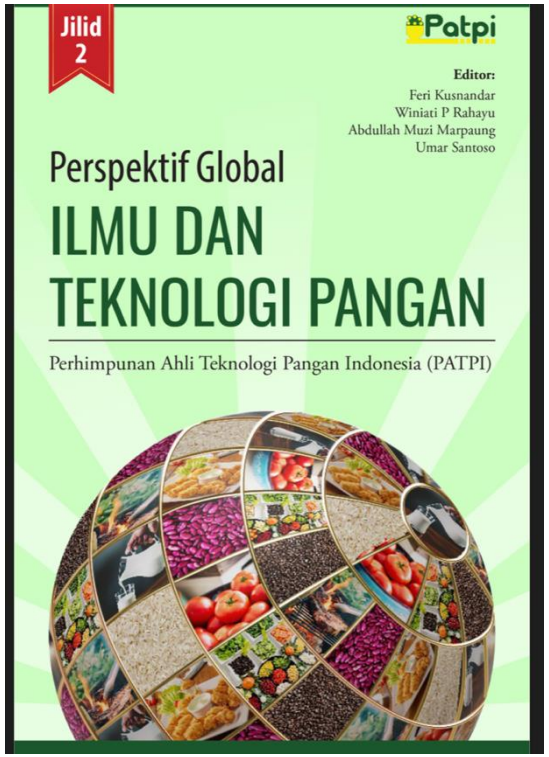
Simple by design: rooted in living heritage, strengthened by science, translated through collaboration, and elevated into trusted Asian leadership.

ROOT → EVIDENCE → TRUST → SHARED PROSPERITY

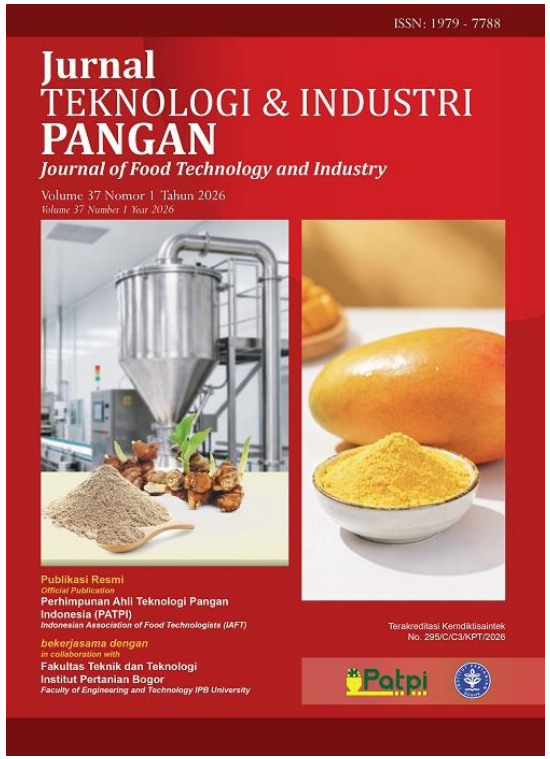
Main Pillar	Meaning	2026–2027 Seed	2028–2030 Scale	2031–2035 Lead
Heritage to Evidence	Honor tradition by turning living knowledge into credible science.	Prioritize pilot ingredients, shared definitions, initial safety + claims pathways.	Build multi-site evidence, reference methods, and Asian-ready data packages.	Asia becomes a trusted source of heritage-derived functional ingredient dossiers.
Talent to Capability	Grow people, labs, and methods that can carry the mission forward.	Launch doctoral exchanges, regulator-science training, and common protocols.	Create regional reference labs, dual-degree pipelines, and working groups.	Asian talents anchor network for food regulatory science.
Lab to Livelihood	Translate science into products, SMEs, exports, and community value.	Prototype high-potential products with traceability and minimum viable evidence.	Scale manufacturing, quality systems, ethical sourcing, and market access.	Heritage-based innovation creates resilient value chains and shared prosperity.
Trust to Leadership	Turn regulation into an enabler of safe, ethical, and innovation-ready growth.	Align with pillars: guidance, collaborative assessments, information platform.	Adopt reliance practices, public registries, digital dossiers, and platform interoperability.	Shape Asian principles for trusted, innovation-ready food systems.

Logic preserved across the deck: collaborative guidance • scientific assessments • information platform • five-helix delivery

Examples of Indonesian Association of Food Technologists' contributions to government, industrial and academic society



Selected Topics for Bachelor's Curriculum



Journals and Publications

Academic Conferences

Bachelor's Curriculum Standards