vi. Research publication portals in Āyurveda and contemporary medical science...

vi. Research publication portals in Āyurveda and contemporary medical science – DHARA, PubMed, Ayush Research Portal, Bioinformatics Centre and Research Management Informatic System

Research Publication Portals in Āyurveda and Contemporary Medical Science

Gateways to Evidence-Based Integration

1. DHARA (Digital Helpline for Ayurveda Research Articles)

- **Objective**: Curates peer-reviewed Āyurvedic research for academia and industry.
- **Features**:
  - **Database**: 50,000+ articles (1980–2023) across 500+ journals (e.g., *Journal of Ethnopharmacology*, *AYU*).
  - **Advanced Search**: Filters by *dravya* (herb), *rasa* (taste), *rog* (disease), or modern biomarkers (e.g., TNF-α).
  - **Global Collaboration**: Links to **WHO Global Index Medicus** for cross-referencing.
- **Key Contribution**:
  - **Meta-Analysis Tools**: Facilitates systematic reviews (e.g., *Ashwagandha* in stress management).
  - **Case Study**: DHARA's 2022 report on *Guduchi* (Tinospora cordifolia) for COVID-19 immunity influenced WHO's TM strategy.

2. PubMed (National Library of Medicine)

- **Role**: Premier biomedical database for Āyurveda-modern medicine integration.
- **Āyurvedic Research Highlights**:
  - **Clinical Trials**: 1,200+ RCTs (e.g., *Curcumin* for arthritis, PMID: 25618800).
  - **Pharmacology**: Mechanistic studies (e.g., *Bacopa monnieri* and BDNF upregulation, PMID: 29174974).
- **Global Impact**:
  - **Citation Metrics**: Āyurveda-related papers average 15+ citations (2023 data).
  - **Collaborative Networks**: Links to **ICMR**, **CCRAS**, and **Harvard Medical School** studies.

3. AYUSH Research Portal

- **Managed By**: Ministry of AYUSH.
- **Scope**:
  - **Publications**: 30,000+ studies (preclinical, clinical, socio-economic).
  - **Policy Documents**: White papers on Āyurveda integration in national health programs.
- **Unique Features**:
  - **TKDL Integration**: Cross-references traditional formulations with modern patents.
  - **Open Access**: Free downloads of *Ayurvedic Pharmacopoeia of India* and *AFI*.
- **Case Study**: Portal's 2021 compendium on *Triphala* guided FSSAI's nutraceutical regulations.

4. National Medicinal Plants Board (NMPB) Bioinformatics Centre

- **Objective**: Digitize ethnomedicinal data for research and conservation.
- **Tools**:
  - **FRLHT-ENVIS Database**: 8,000+ plant species with GIS-based habitat mapping.
  - **PhytoChemica**: AI-driven phytochemical repository (e.g., *Withanolides* in *Ashwagandha*).
- **Applications**:
  - **Drug Discovery**: Identified *Berberine* (from *Daruharidra*) as a SARS-CoV-2 M^{pro} inhibitor.
  - **Conservation**: Red-listed 112 endangered species (e.g., *Aconitum heterophyllum*).

5. Research Management Informatic System (ReMIS)

- **Managed By**: Ministry of AYUSH.

- **Purpose**: Streamline AYUSH research projects from proposal to publication.
- **Features**:
  - **Workflow Automation**: Tracks 500+ ongoing projects (e.g., CCRAS's *Ayurgenomics*).
  - **Data Analytics**: Metrics on funding patterns (e.g., 40% grants for *Prakriti*-based studies).
- **Impact**:
  - **Transparency**: Public dashboards for grant disbursement (₹1,200+ crore since 2020).
  - **Collaboration Hub**: Links researchers with ICMR, DBT, and industry (e.g., Himalaya Drug Company).

6. Comparative Analysis of Portals

Portal	Focus	Unique Feature	Global Integration
DHARA	Āyurvedic literature	*Rasa*-based search filters	WHO Global Index Medicus
PubMed	Biomedical integration	High-impact RCTs and reviews	NIH, Cochrane Library
AYUSH Portal	Policy-driven research	TKDL-linked patents	WHO Traditional Medicine Strategy
NMPB Bioinfo	Ethnobotany & AI	GIS-based conservation tools	GBIF (Global Biodiversity Portal)
ReMIS	Project management	Real-time funding analytics	SDG-linked project tracking

7. Challenges and Innovations

a. Challenges

- **Fragmented Data**: Lack of interoperability between AYUSH and modern databases.
- **Quality Control**: Variable peer-review standards in Āyurvedic journals.
- **Language Barriers**: Limited multilingual access (e.g., Sanskrit-to-English NLP tools).

b. Technological Innovations

- **AI-Driven Curation**:
  - **AyurVAHI** (AYUSH-NIC): NLP tool analyzing classical texts (e.g., *Charaka Samhita*) for modern research cues.
- **Blockchain for IP Protection**:
  - **TKDL 2.0**: Immutable ledger for traditional knowledge (prevents biopiracy).

c. Future Directions

- **Global Interoperability**: Align DHARA with **ClinicalTrials.gov** and **EU Clinical Trials Register**.
- **Citizen Science**: Crowdsourced data via apps like **AYUSH Sanjivani**.
- **Big Data Analytics**: Predictive modeling for drug repurposing (e.g., *Giloy* for Long COVID).

Conclusion

These portals are pivotal in transforming Āyurveda from a traditional system into a globally recognized, evidence-based discipline. By leveraging AI, open-access frameworks, and interdisciplinary collaboration, they address critical gaps in research accessibility, reproducibility, and commercialization. Future advancements must prioritize **FAIR principles** (Findable, Accessible, Interoperable, Reusable) to solidify Āyurveda's role in integrative medicine.