

From the Editorial Board

Dear Industry Leaders and Stakeholders,

I present the inaugural issue of the **INFAH Pashu Ayurveda Times**. The global livestock sector must balance soaring demands with aggressive ecological and food safety targets. **Pashu Ayurveda provides cost-effective, botanical healthcare pathways** to mitigate Antimicrobial Resistance (AMR) and ensure clean, residue-free supply chains.

The government actively backs this enterprise-grade science. It is integrated into undergraduate veterinary courses, paravet institutes, and standard treatment guidelines. This biannual newsletter highlights herbal standardization, formulation rationale, and economic advantages.

Dr. Anup Kumar Kalra

On behalf of the Sub-Committee on
Ayurveda & Phytogenics, INFAH

Executive Brief: Classical Frameworks & Modern "One Health"

- Ancient Origins:** Domestication traditions trace back to 6000–4500 BC. Salihotra is recognized as the world's first veterinarian.
- One Health Integration:** Herbal solutions for mastitis and feed supplementation lower antibiotic reliance, directly checking global AMR threats.
- Policy Progress:** The Ministry of Ayush published "The Ayurvedic Formulary of India, Part-IV (Veterinary)" in October 2022. It provides 50 standardized formulations to streamline industrial manufacturing.

Classification Matrix: Herbal & Botanical Systems

Attribute	Ethnoveterinary Medicine (EVM)	Pashu Ayurveda	Phytogenics	Proprietary Herbal Medicines
Origin	Local community/ oral tradition	Ancient Sanskrit scriptures	Modern animal science	Industrial corporate R&D
Scope	Raw flora, fauna, household items	Text-based herbs & minerals	Bioactive extracts (essential oils)	Branded, blended formulations
Standardization	Low; empirical and localized	Moderate-to-high via validation	High; precise concentrations	Strict industrial GMP standards
Primary Goal	Localized, immediate treatment	Root-cause cure & productivity	Feed efficiency & gut stability	Ready-to-administer alternatives

EVM, Pashu Ayurveda Herbal medicines and Phytogenics Are they all the same?

- **EVM** refers to traditional, community-based, and indigenous knowledge systems used to protect and treat livestock and poultry. The knowledge has been passed down orally through generations among local farmers, pastoralists, and tribal communities worldwide.

The EVM uses readily available local flora, fauna, and household ingredients (e.g., mixing turmeric, garlic, or specific raw leaves to treat mastitis or wounds). The standardization is comparatively low and the dosages and exact preparations are empirical, highly localized, and may vary locally.

- **Pashu Ayurveda** (or Mriga Ayurveda) is the formal, classical, text-based traditional Indian system of veterinary medicine. The origin is rooted in ancient Sanskrit scriptures and classical Ayurvedic compendiums (such as the treatments for cattle, horses, and elephants detailed by ancient scholars like Palakapya). It is based on science and uses herbs & minerals.

The Standardization of Pashu Ayurveda is Moderate-to-high in historical literature, with ongoing modern scientific validation by institutions (like the Ayush/ICAR frameworks in India). The purpose is to treat and prevent animal illnesses and boost productivity using foundational Ayurvedic principles.

- **The Proprietary Herbal Veterinary Medicine** are ready-to-use, commercial, branded formulations manufactured by veterinary pharmaceutical companies. The origin is Modern industrial research and corporate R&D. The scope is Patented or trademarked commercial products (e.g., commercial liver tonics, teat dips, or anti-diarrheal boluses) combining several herbs based on either EVM/Ayurvedic leads or modern phytogenic research.

The Standardization in this category has strict guidelines & are manufactured under commercial licensing (like GMP standards), with labeled ingredients, fixed dosages, and defined shelf-lives. These are sold commercially through veterinary channels to offer farmers safe, standardized, and ready-to-administer herbal alternatives with minimal withdrawal periods for milk and meat.

Technical Profile: Herb of the Month Nagori Ashwagandha

- **GI Certification:** Awarded the **Geographical Indication tag (GI No. 1143)** in Rajasthan's arid Nagaur region.
- **Physical Profile:** Characterized by long, thick, brittle, cavity-free roots.
- **Bioactive Compounds:** Exceptionally rich in starch, withanolides, and alkaloids.
- **Efficacy:** Validated by ICAR-DMAPR for livestock vitality, immune modulation, and stress response management.



Moringa oleifera (Science Insight)

- **Nutritional Content:** Packed with polyphenols, alkaloids, terpenoids, flavonoids, and saponins.
- **Performance Impact:** Inclusion of up to 5% leaf powder in broiler diets optimizes growth performance, blood profiles, and carcass characteristics.
- **Consumer Value Add:** Feed enrichment elevates Polyunsaturated Fatty Acid (PUFA) levels in meat, improving human cardiovascular health profiles.

Essential Oil-based PhytoGenics

INTRODUCTION

PhytoGenics are plant-derived active compounds used in animal nutrition and health. Specific bioactive chemical groups (such as essential oils, flavonoids, saponins, and tannins extracted from herbs, spices, or roots) added systematically to commercial feed.

ESSENTIAL OIL PROCESSING FLOW

Essential oils (EOs) are highly concentrated, volatile aromatic extracts obtained via steam distillation from leaves, flowers, seeds, bark, or roots.

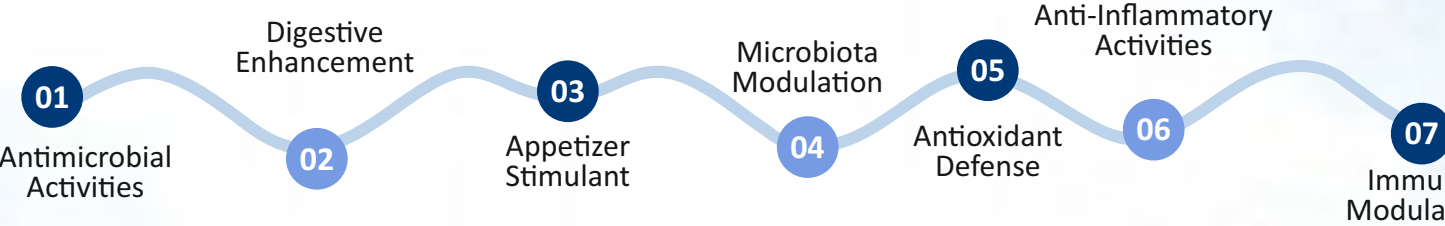


POWERFUL BIOACTIVE COMPOUNDS & PLANT SOURCES

Some important plant sources with their biological actives are oregano, thyme, cinnamon, clove, peppermint, Anise, Lemongrass, Eucalyptus.

PLANT SOURCE	KEY ACTIVE MOLECULES	PRIMARY BIOLOGICAL ACTIVITIES
Oregano	Carvacrol, Thymol	Potent antimicrobial action, broad-spectrum cellular antioxidant defense, and appetizer stimulant
Thyme	Thymol, Carvacrol	Supports intestinal integrity, mucosal immunity, and respiratory health
Cinnamon	Cinnamaldehyde	Enhances digestive enzyme secretion and supports metabolic efficiency.
Clove	Eugenol	Strong bactericidal activity and systemic immune support.

VARIOUS ACTIONS



KEY APPLICATIONS

Poultry Production (Broilers & Layers)

Serves as primary digestive aid & appetizer stimulant. Reduces pathogen load, mitigates heat stress, and optimizes FCR.

Ruminant Health (Dairy & Beef Cattle)

Optimizes rumen fermentation dynamics, decreases ruminal methane emissions, and maintains high milk yield.

Aquahealth

Controls microbial pressure, enhances diet palatability, and protects hepatopancreatic and intestinal integrity.

The PhytoGenics have equally good responses in the swine health.

Details available on request.

Market Dynamics: Indian Feed Phytogenics

- **Current Value:** Evaluated between **USD 44 to 47 million**.
- **Projections:** Estimated to reach **USD 79 million by 2034**, expanding at a CAGR of 6.6% to 8.3%. better to give reference for the data.
- **Primary Driver:** Intense consumption within the poultry segment due to regulatory crackdowns on antibiotic growth promoters.
- **Global Footprint:** India held a 4.5% global revenue share in 2024; China is projected to dominate the Asia-Pacific market by 2030.

Field Validation & Success Stories

- **Tamil Nadu (TANUVAS):**

- The Mastitis Turnaround (Challenge to Validation):**

- Clinical mastitis has long been a devastating challenge, ruining milk quality and forcing high veterinary costs on farmers. To counter this, TANUVAS introduced a standardized ethnoveterinary intervention—a topical paste of Aloe vera, turmeric powder, and lime applied 5 times a day. Field validation results proved its power, crashing mastitis incidence from 42.31% down to just 5.38%, which translates to an outstanding 92.09% overall cure rate without using a single antibiotic.

- Conquering Repeat Breeding (Challenge to Validation):**

- Repeat breeding creates a severe economic drain as farmers feed non-productive cattle through multiple failed inseminations. TANUVAS tackled this challenge using a natural reproductive intervention: a sequential feeding cycle of sprouted finger millets (Ragi), pearl millets, Ajwain, and Methi to cleanse the uterus. Large-scale field validation confirmed that this simple dietary shift plummeted repeat breeding cases from 41.71% to a mere 9.14%, driving a massive +40% boost in conception success rates.

- **Andhra Pradesh (NICRA Villages):**

- Scientifically backed herbal wound-healing pastes and udder care oils, the program achieved a remarkable 35% reduction in chemical antibiotic usage among livestock farmers.

- The Core Interventions & Ingredients:**

- Instead of relying on commercial allopathic ointments or systemic antibiotics, farmers were trained by the Indian Council of Agricultural Research (ICAR) and local Krishi Vigyan Kendras (KVKs) to prepare traditional remedies using locally sourced botanicals.

- Herbal Wound-Healing Pastes:**

- Typically formulated using ingredients like Turmeric (*Curcuma longa*), Neem (*Azadirachta indica*), and Tulsi (*Ocimum sanctum*). These are ground into fresh, topical pastes and applied directly to lacerations, surgical wounds, and maggot-infested injuries.

- Udder Care Oils:**

- Formulated to combat mastitis (udder inflammation) and teat injuries—two of the most common reasons dairy farmers overuse antibiotics. These oils combine base mediums like mustard or coconut oil with antimicrobial extracts like camphor, aloe vera, and garlic.

- **Rajasthan (ICAR-CAZRI):** Ajwain and methi-based tonics successfully optimized digestive performance in camels and goats.

The Challenge:

In Western Rajasthan, summer temperatures regularly exceed 48°C. Climate shifts have severely degraded native rangelands, leaving a 40% deficit in green fodder. Livestock are forced to eat tough, dry, fibrous scrub, leading to rampant digestive failure, bloating, loss of appetite, and severe weight drop.

The Grassroots Solution:

The ICAR-Central Arid Zone Research Institute (CAZRI) in Jodhpur developed a low-cost, natural digestive tonic by optimizing the ratios of two native seed spices:

- Ajwain (rich in thymol to improve gut motility and relieve gas)
- Methi (high in fiber and saponins to act as a prebiotic and soothe the rumen)

Field Validation Results:

CAZRI tested the tonic on 60 camels and 150 goats suffering from severe heat stress and chronic indigestion across the Bikaner and Jaisalmer districts.

- **Rapid Relief:** Acute bloating subsided within 30 minutes of administration.
- **Zero Mortality:** Seasonal deaths caused by gastrointestinal impactions dropped to zero.
- **Stable Yields:** Improved nutrient extraction allowed animals to maintain their weight and milk production during the dry peak season.

Farmer Testimonial – Haldi as a Natural Teat Dip

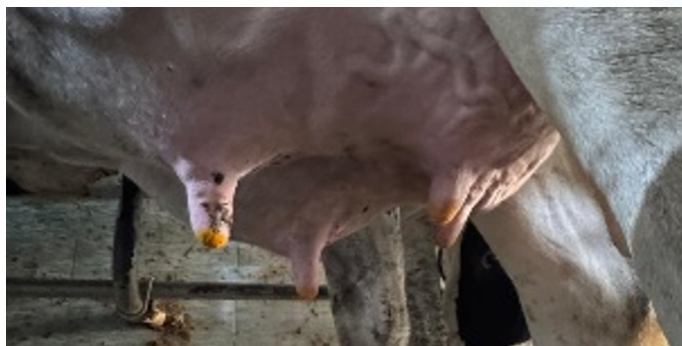
Mr. Major Singh, a progressive dairy farmer, is successfully using **Haldi (Turmeric; Curcuma longa) powder** as a natural teat-care solution after every milking at his dairy farm.

We are milking around 120 cows daily, with an average production of about 32 litres per cow. After incorporating Haldi (Curcuma longa) powder as a teat dip after each milking, we observed around a 20% reduction in mastitis incidence on our farm. We also noticed a significant improvement in teat condition, with the teat score improving by about 2 points. The teats appear healthier, cleaner and better conditioned. This simple and economical practice has become an important part of our post-milking udder-care routine.

Mr. Major Singh,

Progressive Dairy Farmer Village Sadhu Shah Wala
Dist Firozpur Punjab

Farm Snapshot:



**120 cows milked daily | 32 L/cow/day average | 20% reduction in mastitis |
+2-point improvement in teat score**

Interaction with Animal Health Expert:

1. How do you see the role of Pashu Ayurveda in modern dairy farming, particularly in improving animal health, productivity and reducing dependence on antibiotics?

Answer:

Pashu Ayurveda can play an important complementary role in modern dairy farming by supporting immunity, digestion, metabolic health and overall animal resilience. When scientifically validated herbal approaches are integrated with good nutrition, hygiene, vaccination and veterinary care, they can help reduce unnecessary dependence on antibiotics and support responsible antimicrobial use.



Our Expert Dr. Mukesh

2. What are the most important principles that should be followed while selecting and using Ayurvedic herbs and botanical ingredients in livestock?

Answer:

The most important principles are correct identification, purity, standardization, appropriate dosage and proven safety and efficacy. Herbs should preferably be sourced from reliable suppliers and used according to scientifically validated formulations rather than simply relying on traditional claims.

3. How can Pashu Ayurveda and modern veterinary science complement each other in managing common dairy-animal challenges?

Answer:

The two approaches should work together, not in isolation. Modern veterinary medicine is essential for diagnosis and treatment of disease, while Ayurvedic and botanical approaches can provide supportive solutions for immunity, gut health, stress management and recovery. This integrated approach can contribute to better herd health and sustainable production.

4. Standardization and quality are major challenges in herbal animal healthcare. What parameters should farmers, veterinarians and manufacturers consider before selecting an Ayurvedic or herbal product?

Answer:

They should look at botanical identity, active-marker standardization, raw-material quality, manufacturing standards, dosage, safety data and evidence of efficacy. Transparency in composition and proper quality-control documentation are essential for building confidence in herbal animal-health products.

5. What is your vision for the future of Pashu Ayurveda in India?

Answer:

I believe Pashu Ayurveda has strong potential to become an important component of sustainable livestock healthcare in India. The future lies in combining our traditional knowledge with modern scientific validation, standardized formulations, field trials and proper veterinary guidance. This can create solutions that are effective, economical and aligned with the global need for responsible antimicrobial use.

Conclusion-It is high time to look at Pashu Ayurveda, herbal approaches and Phytogenics through the lens of modern science. Integrating traditional knowledge with scientific validation can help stakeholders develop evidence-based, sustainable strategies to improve animal health, farm productivity, and overall profitability.

Dr. Mukesh Sharma is a Senior Dairy Consultant and Farm Advisor with more than 25 years of experience in dairy herd management, precision nutrition, and farm development. He holds a **B.V.Sc. & A.H.** and **M.V.Sc.** in Animal Nutrition, along with qualifications in Dairy Consultancy and Dairy Information Management.

He has extensive expertise in TMR formulation, mineral nutrition, rumen health, reproductive management, disease prevention, heat-stress management, and modern dairy technologies. He has managed 5,000+ dairy animals and developed 40+ customized feed and mineral formulations for commercial farms and feed mills.