

**CASE
STUDY**

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TECHNOLOGY SCOUTING

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**ALTERNATIVES TO FORMALDEHYDE IN
FOOTBATHS FOR DAIRY COWS
TECHNOLOGY SCOUTING**

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CLIENT OVERVIEW & KEY CHALLENGES

The client, a leading dairy farm management company, specializes in developing and implementing innovative health management solutions for dairy cows. The company has a strong focus on improving animal welfare and productivity through advanced veterinary practices and sustainable farming methods.

Key Challenges:

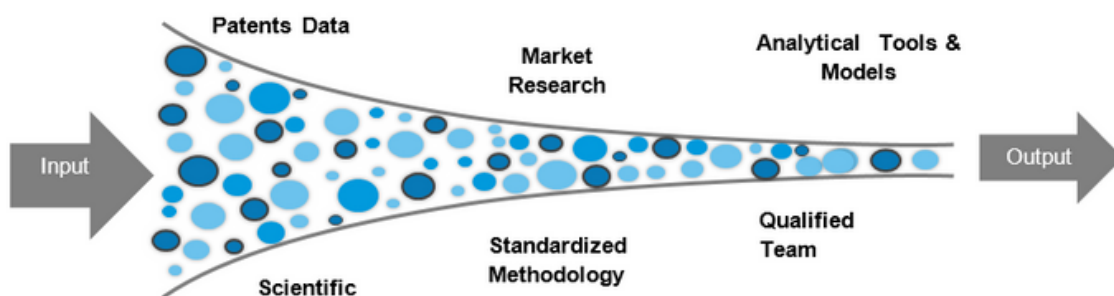
- 1. Health Risks:** Formaldehyde, traditionally used in footbaths for controlling Digital Dermatitis (DD) in dairy cows, poses significant health risks to both animals and farm workers. It is a known carcinogen and can cause severe irritation and burns.
- 2. Environmental Impact:** Formaldehyde is harmful to the environment, particularly in terms of water contamination and chemical waste management.
- 3. Regulatory Pressure:** Increasing regulatory restrictions on the use of formaldehyde due to its toxic nature are pushing the need for safer alternatives.
- 4. Effectiveness in Varied Conditions:** Formaldehyde loses effectiveness in extreme temperatures, reducing its reliability in diverse farm conditions.

PRIMARY OBJECTIVE FOR COLLABORATION WITH RESEARCHWIRE

The primary objective of this collaboration is to identify and recommend viable alternatives to formaldehyde for use in footbaths for dairy cows. These alternatives should:

- Provide similar or better effectiveness in preventing DD.
- Have a non-carcinogenic and safer profile for both animals and farm workers.
- Be environmentally friendly and compliant with regulatory standards.
- Maintain effectiveness in a wide range of environmental conditions.

RESEARCH APPROACHES AND OUTCOMES OBTAINED



Approach 1: Integrated Product and Market Research

- **Objective:** Identify currently commercialized alternatives to formaldehyde and evaluate their usage and limitations.
- **Outcome:** Several alternatives were identified, including HEALMAX® Footbath Concentrate, DIGICUR FOOTBATH, and T-HEXX DRAGONHYDE® DUST, all of which are already in use and demonstrate varying degrees of effectiveness and safety.

Approach 2: Patent Analysis

- **Objective:** Explore patented solutions that provide promising features for hoof care.
- **Outcome:** Identification of patents showcasing innovative compositions such as glutaraldehyde blends and other non-carcinogenic antibacterial agents.

Approach 3: Technology Scouting

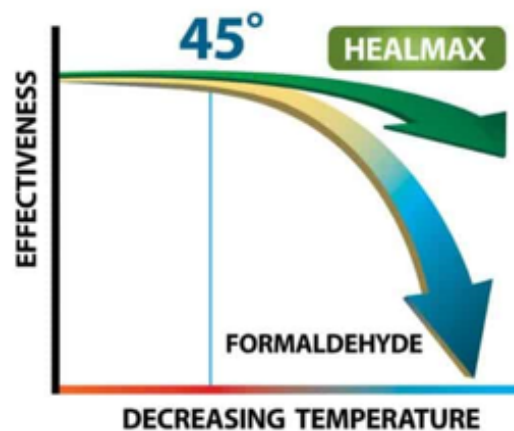
- **Objective:** Scout for potential antibacterial and hoof hardening agents not yet widely adopted.
- **Outcome:** Discovery of new compounds and compositions such as Didecyldimethylammonium chloride (DDAC) and Alkylbenzyldimethylammonium chloride (ADBAC) that show promise in terms of effectiveness and safety.

Approach 4: Non-Patent Literature Search

- **Objective:** Review scientific literature for evidence-based alternatives and their modes of action.
- **Outcome:** Literature review highlighted the effectiveness of organic acids like lactic and glycolic acids, as seen in Pink-Step, and the environmental benefits of such solutions.

Alternatives Identified:

- **HEALMAX® Footbath Concentrate:** Biodegradable and effective even in the presence of organic matter. It is safer for both cows and farm workers and works under extreme temperatures.
- **DIGICUR FOOTBATH:** Utilizes glutaraldehyde and surfactants for a dual-action cleaning and disinfecting effect. It is free from formalin and heavy metals.
- **T-HEXX DRAGONHYDE® DUST:** An innovative dust-based solution that is environmentally friendly and easy to use.
- **Pink-Step:** An organic acid-based product effective in 5 minutes and compliant with stringent biocide standards.
- **4Hooves:** A germicide blend free from antibiotics, formaldehyde, and heavy metals, offering a safe and effective alternative.



BUSINESS IMPACT

- **Enhanced Animal Welfare:** The use of safer, non-carcinogenic alternatives reduces stress and injury in cows, leading to better overall health and productivity.
- **Regulatory Compliance:** Adoption of formaldehyde alternatives helps the farm comply with increasingly strict environmental and safety regulations.
- **Improved Worker Safety:** Reducing exposure to harmful chemicals significantly lowers health risks for farm workers.
- **Sustainability:** Environmentally friendly solutions reduce the farm's ecological footprint and enhance its sustainability profile.
- **Cost Efficiency:** While some alternatives may have higher initial costs, their long-term benefits in terms of health, safety, and compliance can result in overall cost savings.

This case demonstrates the strategic advantage of transitioning to safer and more effective alternatives to formaldehyde in dairy cow footbaths, addressing health, environmental, and regulatory challenges while promoting sustainable farming practices.