

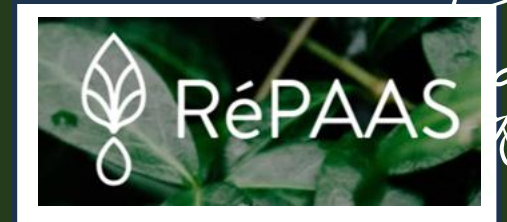


# Herbal Veterinary Medicine Perspective of practitioners

Isabelle LUSSOT-KERVERN  
DVM

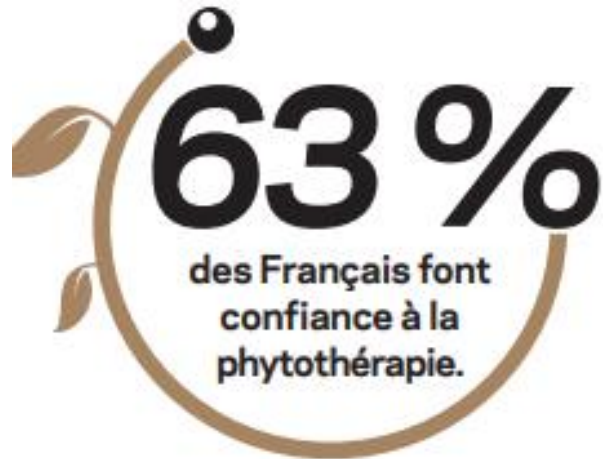
RéPAAS network coordinator: réseau de phyto-aromathérapie de l'AFVAC, AVEF, SNGTV

Coordinator of complementary and integrative commission AVEF



# How French people feel about phytotherapy ?

## LES FRANÇAIS ET LA PHYTOTHÉRAPIE : UN ENGOUEMENT



**35 %**  
utilisent les plantes  
« en complément  
de la médecine classique ».

**45 %**  
des Français disent avoir  
recours à la phytothérapie.



**28 %**  
lui donnent la priorité  
devant la médecine  
classique.

**43 %**  
des Français qui ont  
régulièrement recours  
à la phytothérapie  
(et à l'homéopathie)  
le font en prévention.



[source : Observatoire sociétal du médicament 2011 - TNS-Sofres pour Les entreprises du médicament, LEEM, 24 mai 2011]

# French human hospitals are moving forward



le 11 SEPTEMBRE 2015, sur un sujet dédié à :

## **MISE EN PLACE DE PROCEDURES D'AROMATHERAPIE A L'INSTITUT DE CANCEROLOGIE DE LORRAINE (ICL)**



**HCC... UN HÔPITAL AROMATIQUE...**

le 27 juin 2014, sur un sujet dédié à :

Les huiles essentielles et leurs expérimentations dans les services hospitaliers de France : exemples d'applications en gériatrie-gérontologie et soins palliatifs

pour obtenir

**le Diplôme d'Etat de Docteur en Pharmacie**

**French hospitals start to  
implement protocols with  
herbal medicines and  
essential oils**

# American millennials and CAM

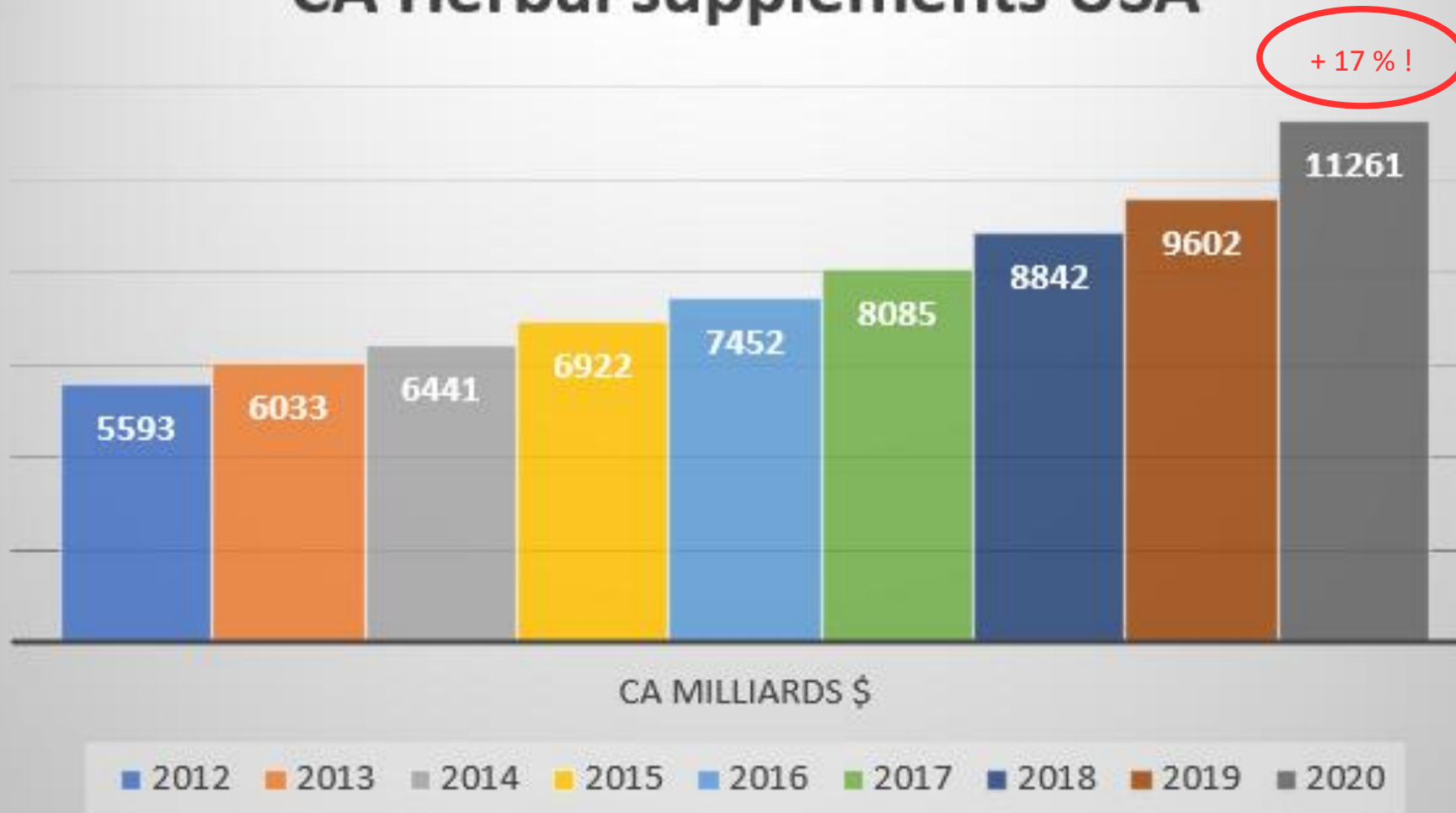
(Complementary and Alternative Medicine)

- 74 % of animal owners who use CAM would use this medicine for their animals.
- Several 'natural therapies'
  - Aromatherapy : 81 %
  - Naturopathy : 73 %



Source : <http://www.aaha.org>

## CA Herbal supplements USA



*Sambucus nigra*

275 Billion \$

**+ 150 %**

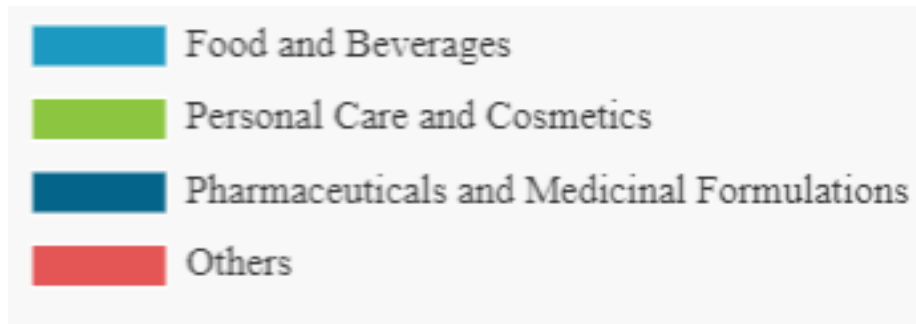
(COVID)

# Essential oils market evolution

Europe Essential Oils Market Size, 2017-2028 (USD Billion)

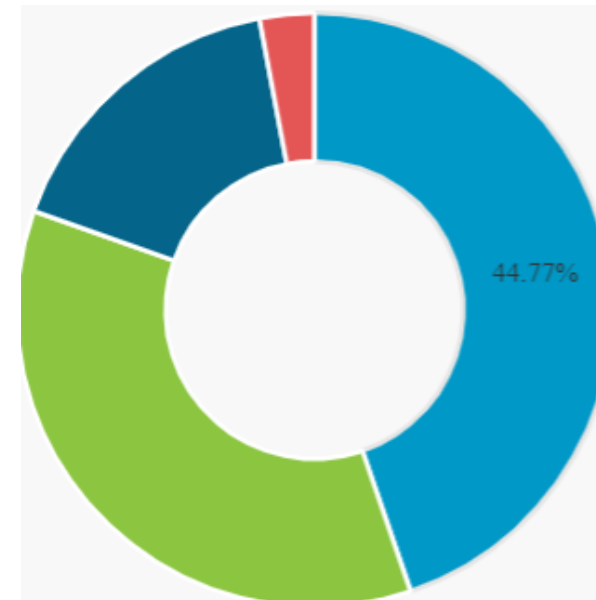


<https://www.fortunebusinessinsights.com/industry-reports/essential-oils-market-101063#>

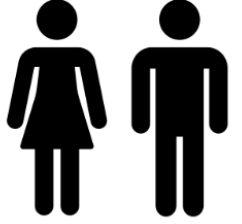


Germany 2020

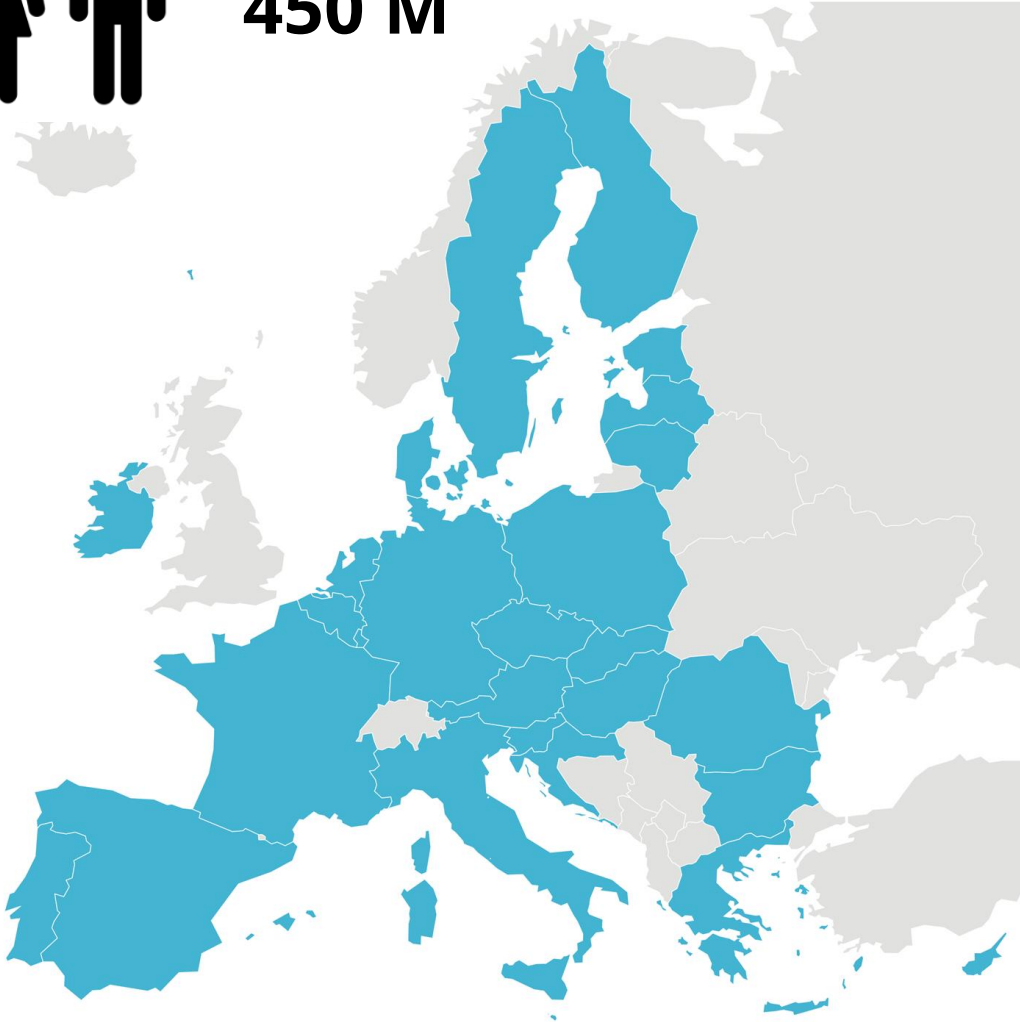
**The INCREASING demand for aromatherapy is the key factor driving the market growth**



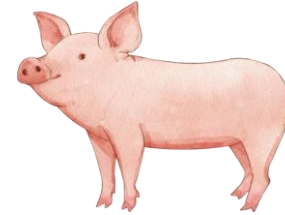
# Production animals in Europe



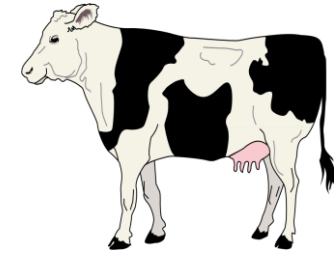
**450 M**



**1,6 B**



**132 M**



**72 M**

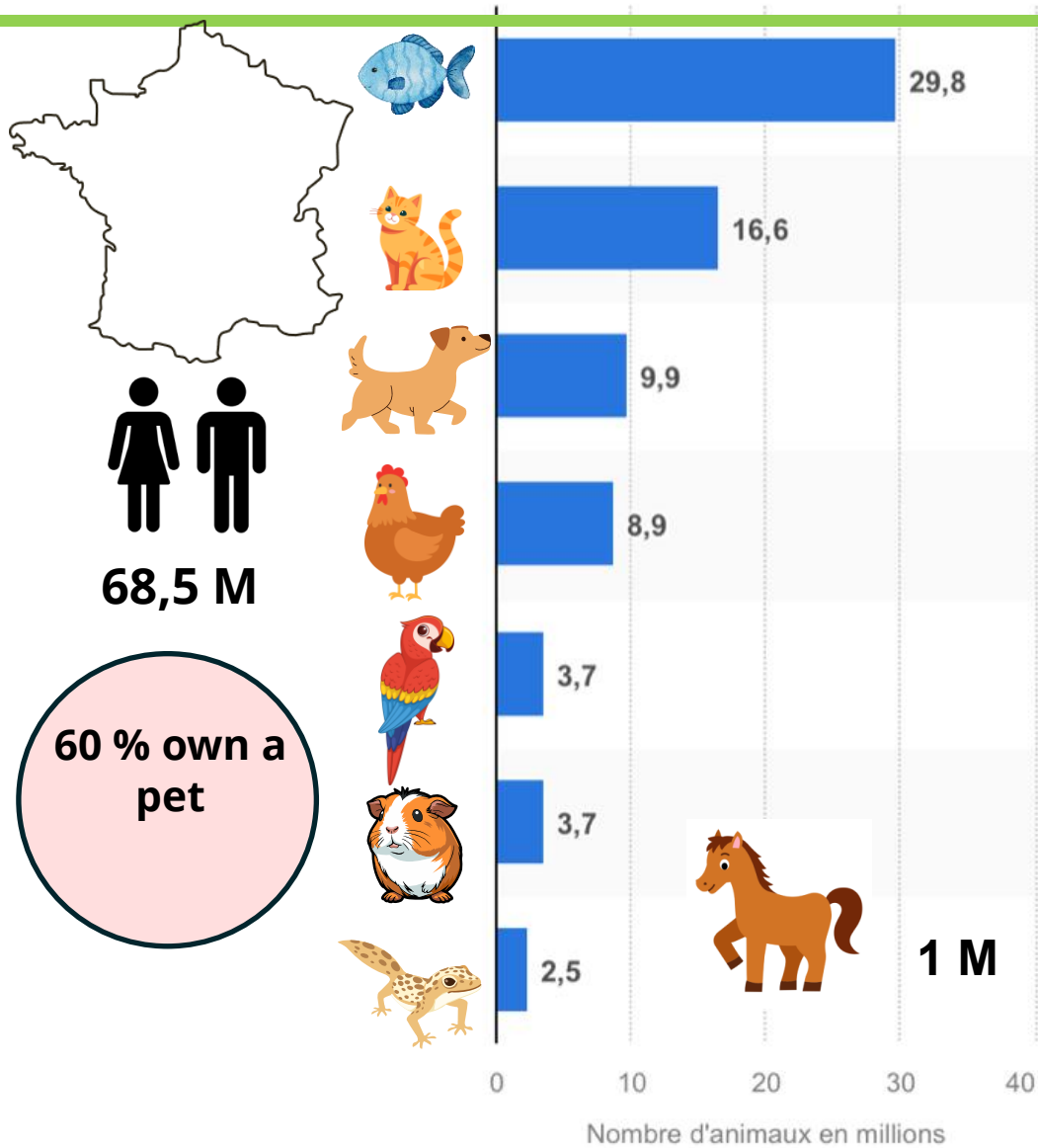


**57 M**



**10 M**

# Companion animals



**Pets in France (Millions)**



## Pets in Europe :

**Cats : 129 M**

**Dogs : 106 M**

**Birds : 52 M**

**Small mammals : 30 M**

**Reptiles : 12 M**



**450 M**



**6 M**

# Complementary feed uses

« Self-medication for therapeutic purposes with herbal substances is prohibited »



# What do we say to farmers and animal owners ?

1000 + labs and 60 Billion € Market

« You get what you pay for ! »

Which excipients were used ?

Alcohol ?

Extraction process ?



**Botanical  
Adulterants  
Program**

1. BMC Med. 2013 Oct 11;11:222. |

DNA barcoding detects contamination and substitution in North American herbal products.

Newmaster SG(1), Grguric M, Shanmughanandhan D, Ramalingam S, Ragupathy S.

Author information:

(1)Centre for Biodiversity Genomics, Biodiversity Institute of Ontario (BIO), University of Guelph, Guelph, Ontario N1G 2W1, Canada. snemast@uoguelph.ca.

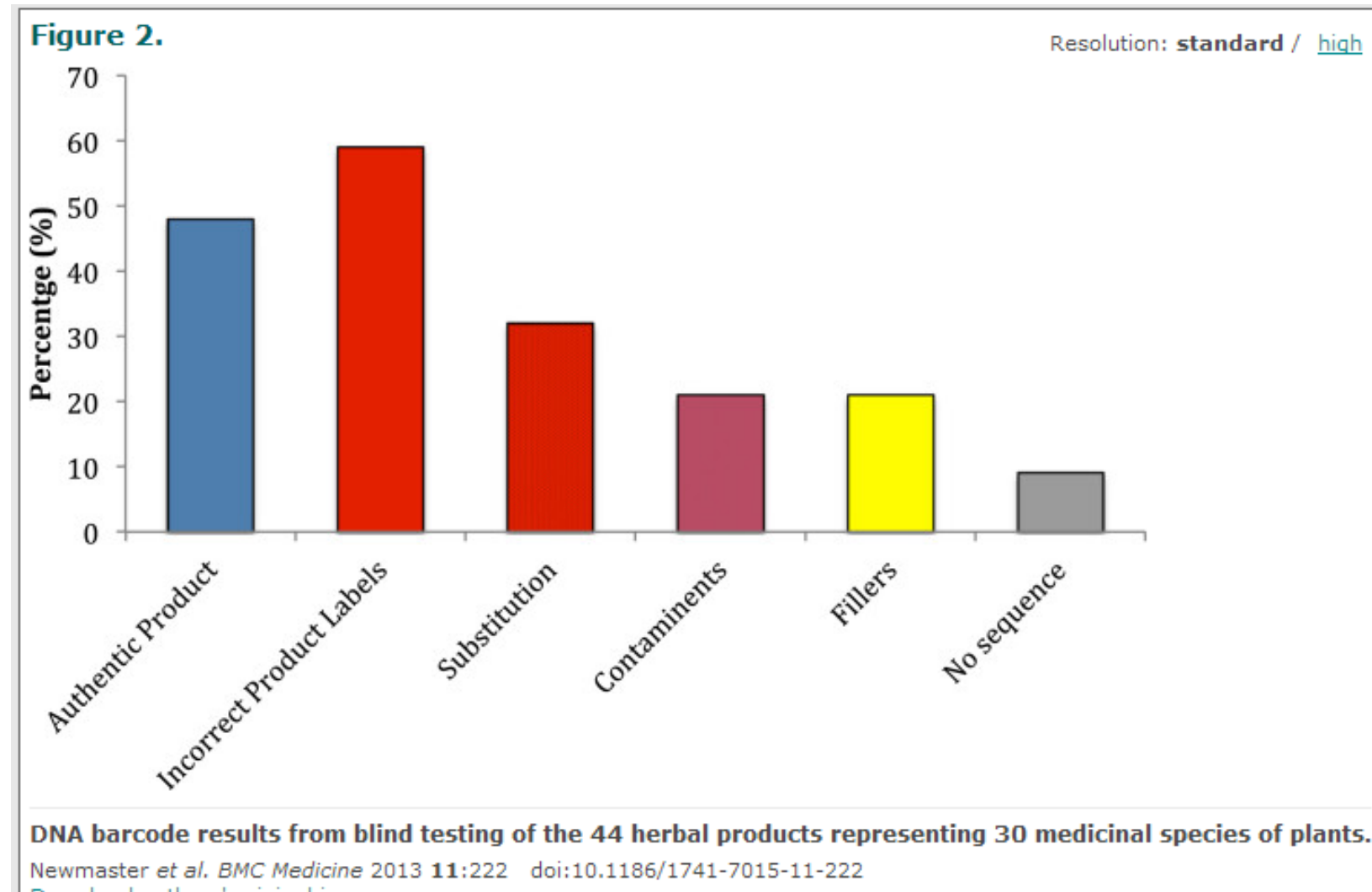


AMERICAN HERBAL PHARMACOPOEIA®



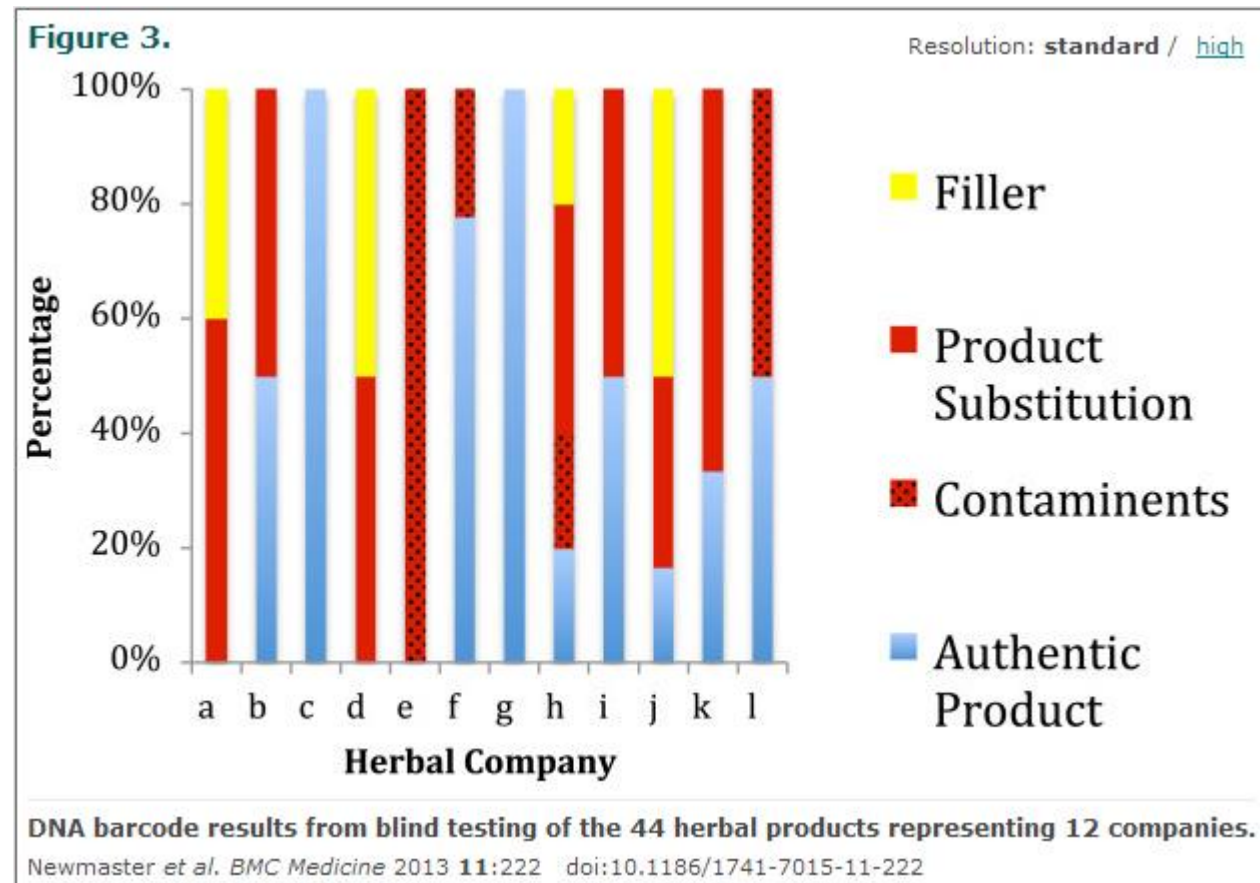
<https://abc.herbalgram.org/>

# Independant quality control



**OTC feed supplements OTC in USA**

# Independant quality control



44 products tested :

- 60 % : not written on the label
- 32 % : substitutions products
- Some toxic plants

9 % : flour + powdered rice

# Why is detailed composition so important ?

## Erin Miscioscia

### Clinical Assistant Professor – Integrative Medicine

Department of Comparative, Diagnostic, and Population Medicine  
[emiscioscia@ufl.edu](mailto:emiscioscia@ufl.edu)  
PO Box 100123  
2015 SW 16th Ave  
Gainesville, FL 32610-0123  
(352) 392-2235  
Fax: (352) 846-2445



### Education

- Diplomate, American College of Veterinary Sports Medicine and Rehabilitation, 2020
- DVM, Cornell University, College of Veterinary Medicine, 2015
- BS, University of Connecticut, College of Agriculture and Natural Resources, 2009

### Professional Experience

- Residency, Integrative Veterinary Medicine (Canine Sports Medicine and Rehabilitation), University of Florida, College of Veterinary Medicine, 2019
- Certified Veterinary Acupuncturist, Chi Institute of Traditional Chinese Veterinary Medicine, 2017
- Internship, Small Animal Medicine and Surgery, Red Bank Veterinary Hospital, 2016

### Honors and Awards

- First Place, Original Research Abstract, American College of Veterinary Sports Medicine and Rehabilitation Annual Meeting, 2019

# Comparison composition Dog- Human OTC – 2019 Study

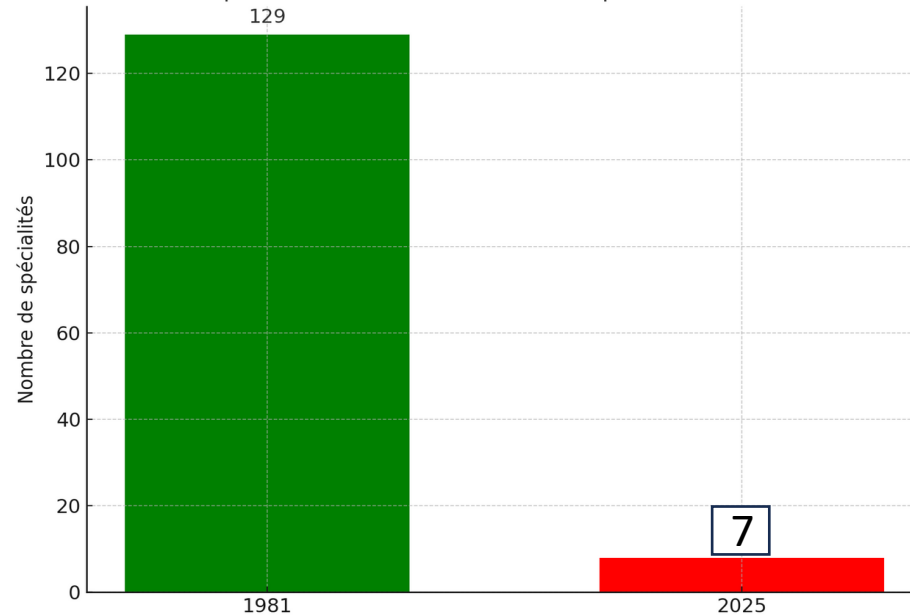
| Dog | CC° KBA mg/g | CC° AKBA mg/g                   |
|-----|--------------|---------------------------------|
| 1   | 2,0          | 2,5                             |
| 2   | <b>24,8</b>  | 8,8                             |
| 3   | 8,9          | 0,1                             |
| 4   | 0,3          | 0,4                             |
| 5   | 0,02         | 1,7                             |
| 6   | 0            | 2,7                             |
| 7   | 0,6          | <b>56,2</b><br>(Etiquette 49,4) |

| Human | CC° KBA mg/g | CC° AKBA mg/g                  |
|-------|--------------|--------------------------------|
| 1     | 0,1          | 12,7<br>(Etiquette 7,1)        |
| 2     | 0            | 118,4<br>(Etiquette 64,6)      |
| 3     | 0            | 147,9<br>(Etiquette 66)        |
| 4     | 15,7         | 235                            |
| 5     | 14,8         | 19,2                           |
| 6     | 0            | <b>155,7</b><br>(Etiquette 94) |

## Comparison composition Dog- Human OTC – 2019 Study

- Significant variability in boswellic acid concentrations depending on the product.
- For example, AKBA concentration varies from 12.7 to 155.7 mg/kg!
- It is therefore **VERY DIFFICULT, IF NOT IMPOSSIBLE**, to know the administered dose of boswellic acids without conducting independent analysis.
- Dosages recommended by manufacturers are far lower than those used in studies.
- The good news: no adverse effects were observed in rats at a dose of 2500 mg/kg of an AKBA-enriched extract.
- Clinical studies (including bioavailability, tolerability, dosages, etc.) are urgently needed.

# Evolution of herbal or essential oil-based veterinary products



**Herbal Medical  
Veterinary product  
guaranties**

- **Quality**
- **Efficacy**
- **Safety**



- Centella asiatica* Tincture : 89,50 %
- Lavandula officinalis* EO : 5,80 %
- Rosmarinus officinalis* EO : 1,50 %
- Aesculus hippocastanum* Tincture : 1,20 %
- Thymus officinalis* EO : 0,90 %
- Cupressus officinalis* EO : 0,80 %
- Medicago sativa* Tincture : 0,16 %
- Carlina acaulis* Tincture : 0,14 %



| Nom du principe actif                  | Quantité de principe actif |
|----------------------------------------|----------------------------|
| Lespedeza capitata (extrait fluide de) | 0.15 mL                    |
| Orthosiphon (extrait fluide d')        | 0.12 mL                    |
| Artichaut                              | 0.18 mL                    |

Parahydroxybenzoate de méthyle (E218)

1 mg

Parahydroxybenzoate de propyle (E216)

0.2 mg

Ethanol à 96 % 0.05 mL

Chlorure de magnésium, Saccharose, Cyclamate de sodium

Glycérol, Arôme caramel, Eau purifiée

# TRANSCUT – UAB

Préconisé pour :



## VEAUX

✓AMÉLIORER LA  
FONCTION RESPIRATOIRE  
DES VEAUX

✓PRÉPARER LES ANIMAUX  
AUX CONCOURS



## BREBIS

✓AMÉLIORER LA  
FONCTION RESPIRATOIRE  
DES AGNEAUX ET DES  
BREBIS



## CAPRINS

✓AMÉLIORER LA  
FONCTION RESPIRATOIRE  
DES CHEVREAUX ET DES  
CHÈVRES



# ‘Borderline’ products

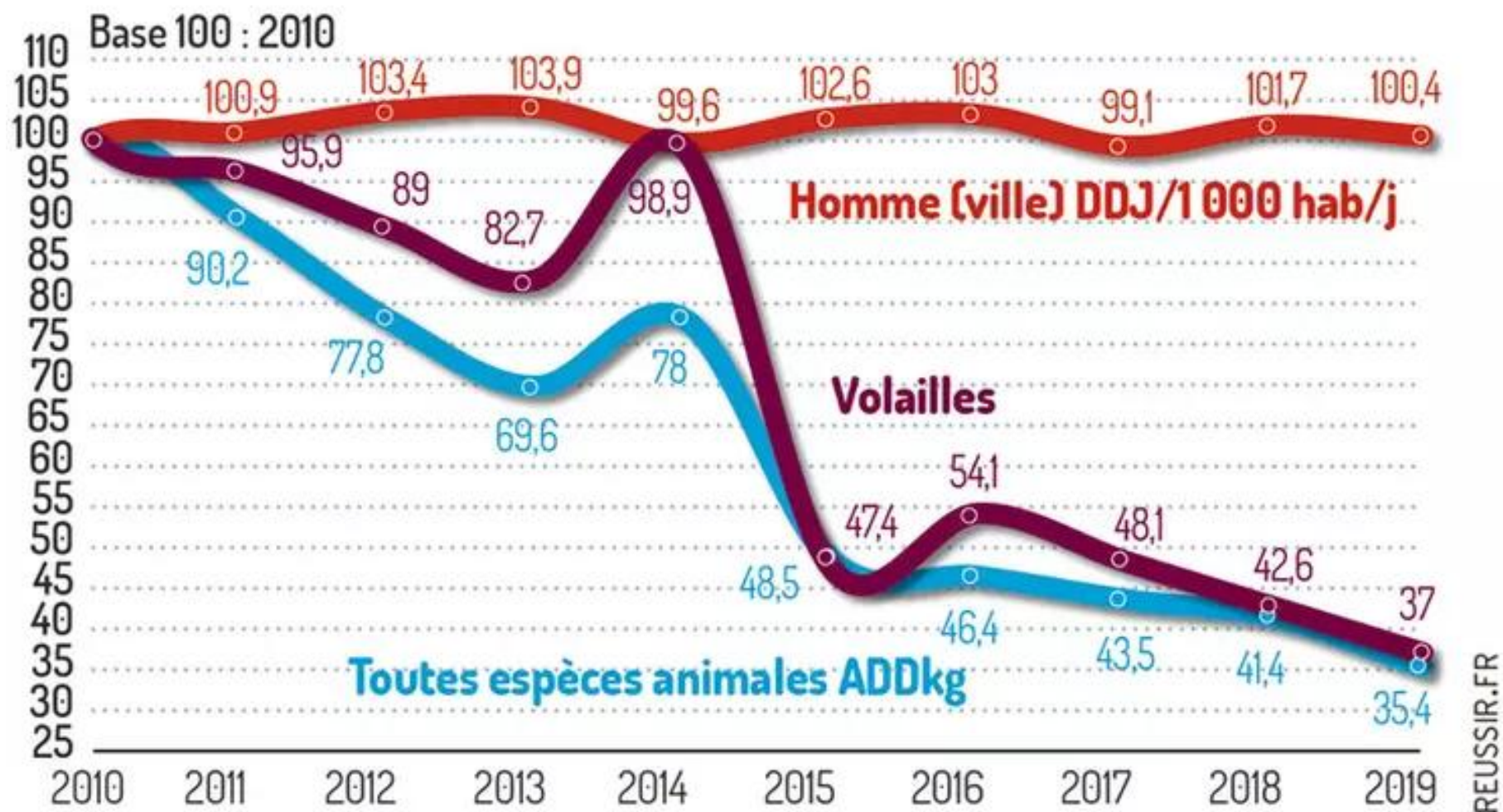
## COMPOSITION

Huile de colza issue de  
l'agriculture biologique,  
huile de tournesol issue de  
l'agriculture biologique.  
Huile essentielle de ravinsara  
(*Cinnamomum camphora*)  
Huile essentielle de laurier  
(*Laurus nobilis*)  
Huile essentielle de cyprès  
(*Cupressus semperviens*)



# **EcoAntibio Plans**

## Comparaison des usages des antibiotiques chez les animaux et chez l'homme



Source : Légiville d'après Anses-ANMV et ANSM.

All animal sectors (including pets) > reduce the risks of antibiotic resistance in veterinary medicine, aiming to preserve the effectiveness of antibiotics.

**The Ecoantibio plan includes 40 measures based around 5 strategic axes:**

**axis 1:** promote good practices and raise awareness among stakeholders of the risks associated with antibiotic resistance and the need to preserve the effectiveness of antibiotics

**axis 2: develop alternatives to avoid the use of antibiotics**

**axis 3:** strengthen supervision and reduce risky practices

**axis 4:** strengthen the system for monitoring antibiotic consumption and antibiotic resistance

**axis 5:** promote European approaches and international initiatives



# THE ECOANTIBIO PLAN 2012-2016

## REDUCING THE USE OF ANTIBIOTICS IN VETERINARY MEDICINE

A Global Challenge for Human and Animal Health

### TWO OBJECTIVES

**-25%**  
Reduce the use of antibiotics by 25% within 5 years



And safeguard the efficacy of antibiotics

### LIVESTOCK AND PETS



### RESISTANCE TO ANTIBIOTICS

Bacterial resistance to antibiotics: antibiotics can no longer destroy bacteria and help the healing process.

Careful, responsible use of antibiotics by veterinarians and breeders cuts the risk of resistance to antibiotics.

NUMBER OF HUMAN DEATHS PER YEAR LINKED TO RESISTANCE TO ANTIBIOTICS

**12,500** in France  
**700,000** worldwide



### 40 MEASURES BASED ON 5 STRATEGIC PRIORITIES

1

Mobilise and promote good practices

2

Develop alternatives to antibiotics

3

Reduce risky practices

4

Follow the trend in antibiotic use

5

Act at European and international level

### BUDGET FOR THE PLAN

**2** million € per year  
Set aside for research, training and advertising campaign

### RESULTS IN 2015

**-20%** cut in the use of antibiotics in animals (all families) over 4 years

### ÉCOANTIBIO

RÉDUIRE L'UTILISATION DES ANTIBIOTIQUES VÉTÉRINAIRES

A plan, part of Agro-Ecology

AGRO-ÉCOLOGIE  
PRODUISONS  
AUTREMENT

SOURCE : DIGAL OCTOBER 2011

## NUMBER OF HUMAN DEATHS PER YEAR LINKED TO RESISTANCE TO ANTIBIOTICS



**12,500** in France  
**700,000** worldwide



LE PLAN ÉCOANTIBIO  
CONTRIBUE À RÉDUIRE  
L'UTILISATION  
DES ANTIBIOTIQUES  
CHEZ LES ANIMAUX  
ET AINSI  
**PRÉSERVER  
LEUR EFFICACITÉ  
THÉRAPEUTIQUE.**



**C'EST UN ENJEU  
MONDIAL  
POUR LA SANTÉ  
HUMAINE  
ET ANIMALE**



LE PLAN ÉCOANTIBIO  
A PERMIS LA RÉDUCTION DE

**-45%**

de l'utilisation  
des antibiotiques  
vétérinaires

EN 9 ANS, TOUTES FILIÈRES ANIMALES CONFONDUES.



**L'ANTIBIORÉSISTANCE,**

c'est la faculté des bactéries  
à résister aux antibiotiques :  
ils ne détruisent plus les bactéries  
et ne permettent plus la guérison.

L'utilisation prudente et responsable  
des antibiotiques par les vétérinaires  
et les éleveurs limite les risques  
d'antibiorésistance.



NOMBRE DE DÉCÈS  
HUMAINS PAR AN LIÉS  
À L'ANTIBIORÉSISTANCE

**5 500**

EN FRANCE

**700 000**

DANS LE MONDE

**Le 1<sup>er</sup> plan  
écoantibio 2012-2016**

visait à réduire  
de **25 % en 5 ans** l'utilisation  
des antibiotiques  
chez les animaux.

**Le 2<sup>e</sup> plan  
écoantibio 2017-2022**

visait à consolider  
ce résultat  
en poursuivant  
les efforts.

Depuis 2013,  
**plus de 200 projets  
de recherche ont été financés**  
dans le cadre du plan  
écoantibio (développement  
d'outils pour les professionnels,  
formation, recherche  
appliquée, etc.)

SOURCE : DGAL OCTOBRE 2021.



**European  
Environment  
Agency**

European Green Deal

50 % reduction of  
Antibiotics sales for  
production animals and  
aquaculture before 2030



**Veterinary antimicrobials in Europe's  
environment: a One Health perspective**

Briefing | Published 07 May 2024

Image © Matthias Zomer on Pexels

<https://www.eea.europa.eu/en/analysis/publications/veterinary-antimicrobials-in-europes-environment-a-one-health-perspective>

The objective of the Ecoantibio 1 plan has been achieved with a 37% reduction in animal exposure to antibiotics in 5 years. The objective of reducing the use of fluoroquinolones and 3rd and 4th generation cephalosporins by 25% in 3 years has been largely exceeded.

# French veterinary phyto-aromatherapy network

**A group of 15 vets got together and asked the 3 technical organisations**

- To create a **transversal group** to get all the practising vets together
- To **promote the use of phyto-aromatherapy** in the veterinary profession
- To implement **research projects** and develop **continuing education**, more specifically in relation to the EcoAntibio plan
  - To urgently initiate research projects on security of use : for the animal but also for the consumers, and get some veterinarians involved in these projects
- To rely on our 3 technical organisations, in order to **facilitate communication with the regulatory bodies**.





# RéPAAS : Veterinary phyto-aromatherapy network

Réseau de phyto-aromathérapie vétérinaire  
de l'AVEF, AFVAC et SNGTV



## 2018 EcoAntibio Plan n°2

Acquire references on alternative treatments  
to limit antibiotic prescriptions

Create a network of veterinary practitioners  
using phyto-aromatherapy

## 2025 EcoAntibio Plan n°3 > RéPAAS 2.0

Facilitate access to resources for complementary measures  
in veterinary medicine, based on their assessment



# Herbal medicine in production animals

ORIGINAL RESEARCH article

Front. Vet. Sci., 25 February 2021 | <https://doi.org/10.3389/fvets.2021.563957>

## Alternative Medicines on the Farm: A Study of Dairy Farmers' Experiences in France

1. Farmer's interest
2. Technical, ethical, and economic reasons
3. Rely on short-term training courses
4. **Few specialized veterinarians**
5. Broader expectations for advice and support in moving toward the integrated management of livestock health



# How French vets are getting involved herbal medicines ?



DIU : inter-university diploma in  
Pharmacy Universities



DIE : inter-school diploma since  
2018

# Why vets need to get involved in herbal medicines

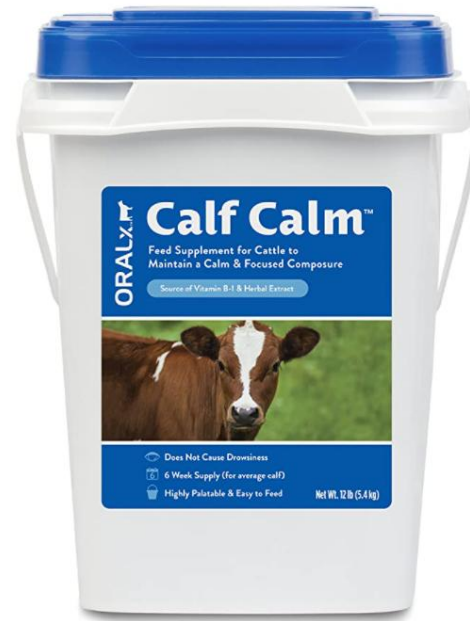


<https://www.blog-gds-bretagne.fr/>

- Veterinary expertise means
  - accurate diagnosis
  - traceability
  - maintaining animal welfare
  - Reduce antibiotics usage
- Current situation
  - Very few plants with known MRL
  - Farmers use dietary supplements
    - Unknown quality
    - Unkown quantity
    - No veterinary follow up on the potential effects



# “Therapeutic allegation” in dietary supplements



# What do vets need to get involved in herbal medicines ?

SCIENTIFIC  
EVIDENCE



QUALITY  
PRODUCTS

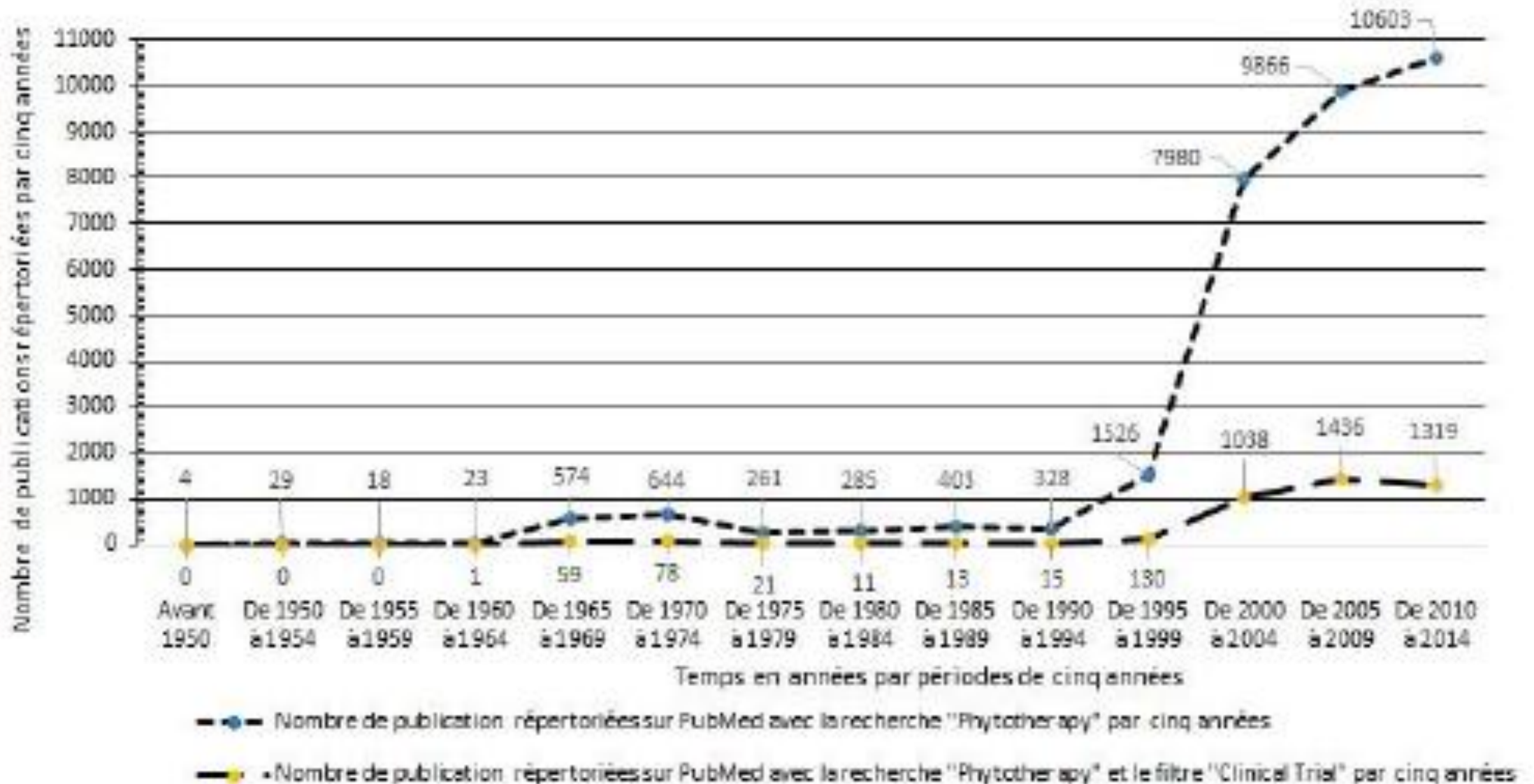
ADAPTED  
LEGISLATION

ANIMAL,  
USER AND CONSUMER  
SAFETY

VETERINARY  
FOLLOW UP

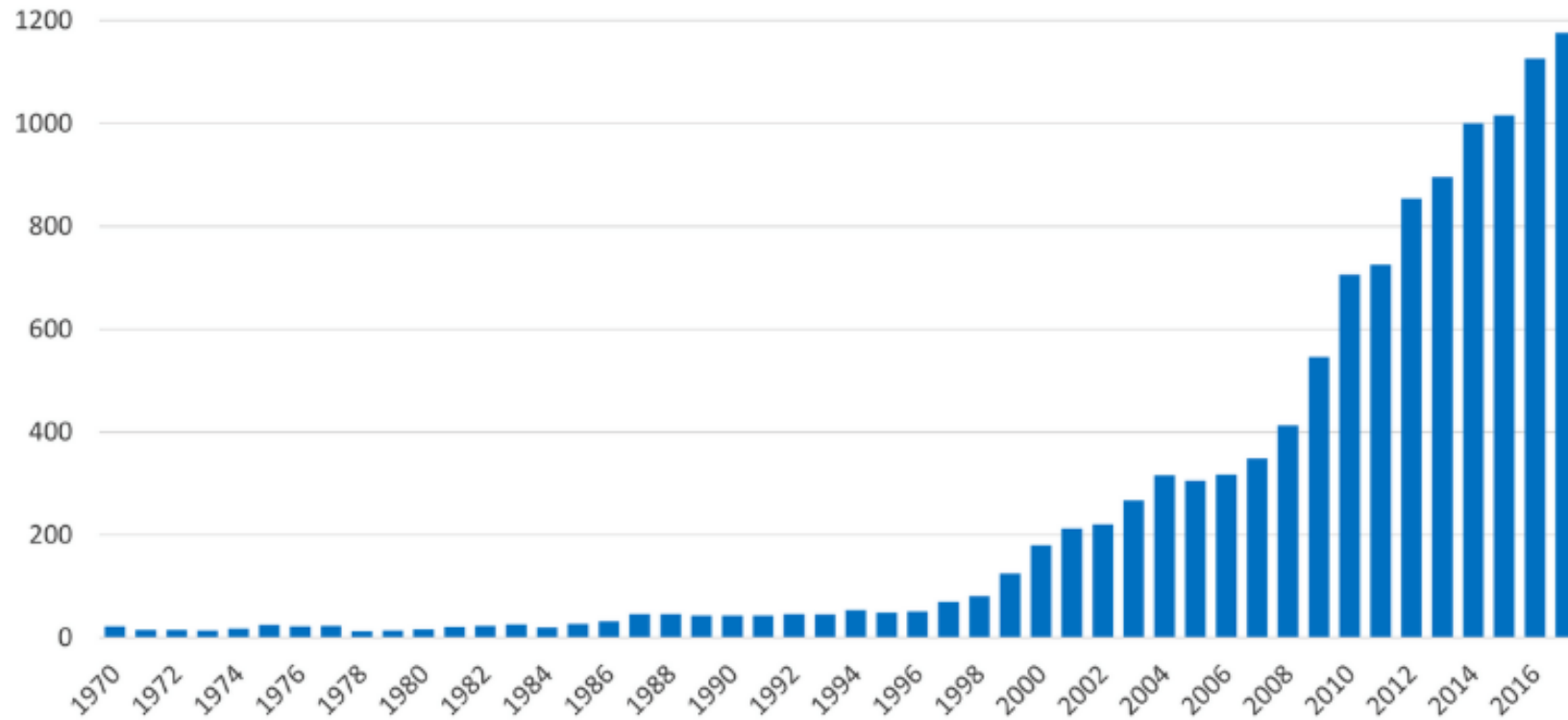
# USING AND BUILDING UP SCIENTIFIC EVIDENCE

# Phytotherapy on Pub Med

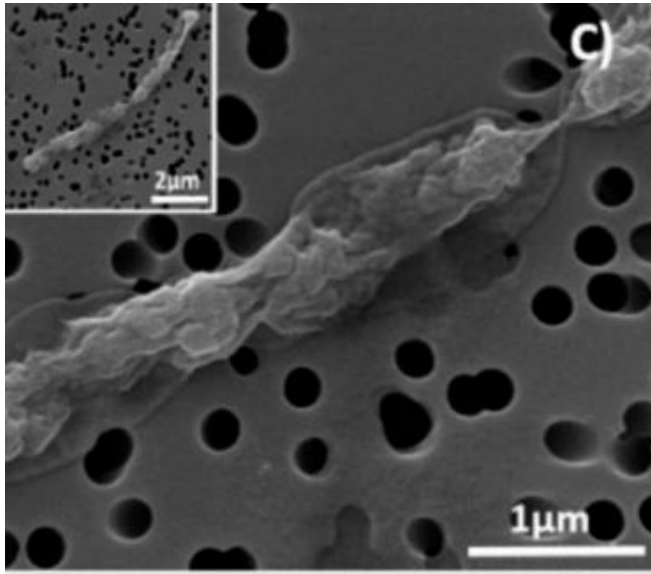
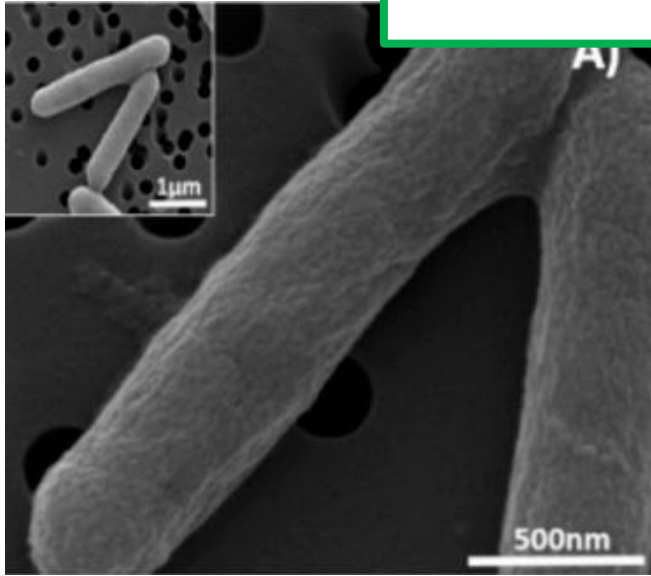


# Essential oils on Pub Med

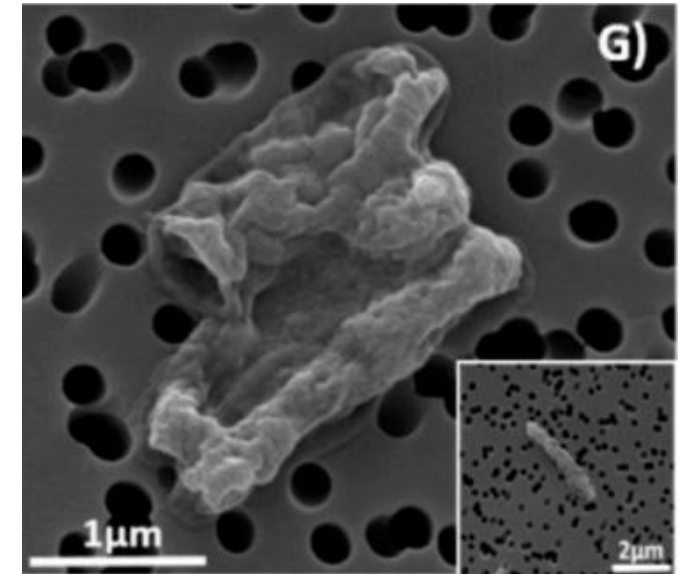
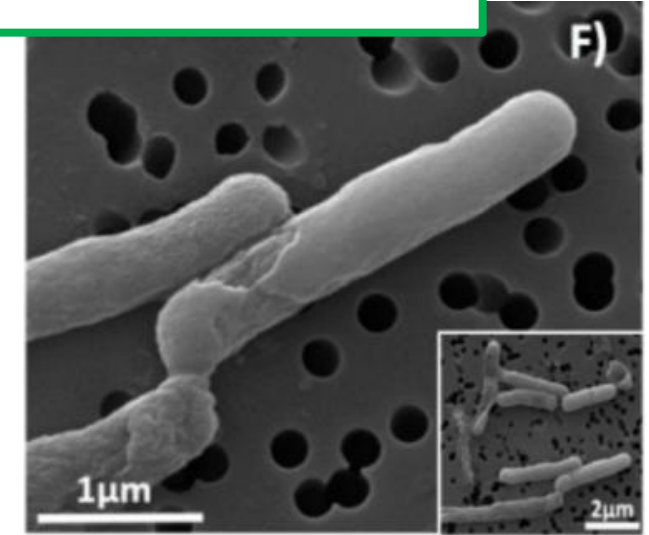
Number of papers containing "essential oil" or "essential oils" in title or abstract



# *E. coli* : in vitro effect of EO



Antibacterial  
effect of  
essential oils



## EO *in vitro* synergistic effects

| Essential Oils   | MIC (mg/mL) |             | FIC  | FICI | Outcome     |
|------------------|-------------|-------------|------|------|-------------|
|                  | Alone       | Combination |      |      |             |
| E. caryophyllata | 1.25        | 0.16        | 0.13 | 0.38 | Synergistic |
| C. zeylanicum    | 1.25        | 0.31        | 0.25 |      |             |
| E. caryophyllata | 1.25        | 0.31        | 0.25 | 0.5  | Synergistic |
| C. zeylanicum    | 0.63        | 0.16        | 0.25 |      |             |
| E. caryophyllata | 1.25        | 0.08        | 0.06 | 0.31 | Synergistic |
| C. zeylanicum    | 0.63        | 0.16        | 0.25 |      |             |
| E. caryophyllata | 1.25        | 0.63        | 0.5  | 0.75 | Partial     |
| C. zeylanicum    | 1.25        | 0.31        | 0.25 |      | synergy     |

Zainol, S.N., et al (2017). Synergistic benefit of *eugenia caryophyllata* L. and *cinnamomum zeylanicum* blume essential oils against oral pathogenic bacteria.

Synergistic  
effect of  
essential oils  
similar to  
*in vitro*  
antibiotic effect

# EO and Antibiotics synergistic effects

- Pharmacist research team in Leicester UK  
Owen, L., and Laird, K. (2018). Synchronous application of antibiotics and essential oils: dual mechanisms of action as a potential solution to antibiotic resistance. Crit. Rev. Microbiol. 44: 414–435.
- Australian research team  
➤ Cheesman, M.J., et al (2017). Developing New Antimicrobial Therapies: Are Synergistic Combinations of Plant Extracts/Compounds with Conventional Antibiotics the Solution? Pharmacogn Rev 11: 57–72.

Studies on  
potential  
solution for  
antibiotic  
resistances

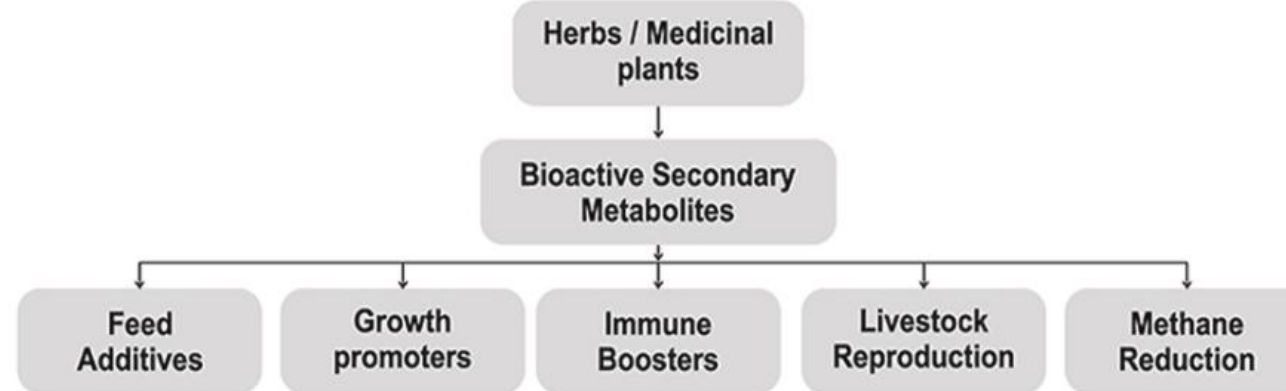
# Ethnopharmacology studies

Kuralkar P, et al (2021). Role of herbal products in animal production – An updated review. Journal of Ethnopharmacology.

## Role of Herbal Products in Animal Production

### BENEFICIAL EFFECTS OF HERBS

- Easily synthesized
- Easily available
- Highly effective
- Less expensive
- Fewer side effects



### Plants used as feed additives, Growth promoters, Immune boosters



### Plants used in Reproductive disorders



### Plants reducing methane in rumen





# **Veterinary data**

# Veterinary in vitro research

## Production animals

- **Positive influence on crucial parameters in animal production**, (body weight gain, feed conversion rate, and cholesterol reduction meat quality).
- **Similar effects to those promoted by traditional drugs**
- **More *in vivo* studies needed**

Matté et al. 2023

## In vitro effects on resistant bacteria

- **Significant antibacterial effects** of *Thymus vulgaris*, *Rosmarinus off*, *Origanum compactum* and *Ocimum basilicum* on foodborne Bacteria as *E. coli*, *Salmonella spp.*, *Staphylococcus spp.* and *Listeria spp* with potential antibiotic resistance in animal production.
- Synergetic effects with antibiotics of nanocapsuled EOs.

Zhang L et al. 2022

## Endometritis in mares

- *Ocimum basilicum*, *Rosmarinus officinalis*, and *Cymbopogon citratus* test on endometritis- causing microorganisms in mares. > *Strep. equi*, *Staph. aureus*, *Klebsiella. pneumoniae*, *E. coli*, and *C. Albicans* (no efficiency on *Pseudomonas aeruginosa*)

Lisboa et al. (2022) Journal of Equine Veterinary Science  
Ebani, VV, et al (2021). Natural Product Research



# Veterinary in vitro research

## Gram - in dogs

- 53 clinical isolates, including strains of *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumoniae* and *Proteus mirabilis*
- Manuka oil +Tris-EDTA > synergistic effect > reduction of the doses required to inhibit and kill Gram-negative pathogenic bacteria

Soon-Young Song et al. 2020

## External otitis pathogens

- **Significant antibacterial effects** of *Thymus vulgaris*, *Rosmarinus off*, *Origanum comptactum* and *Ocimum basilicum* on foodborne Bacteria as *E. coli*, *Salmonella spp.*, *Staphylococcus spp.* and *Listeria spp* with potential antibiotic resistance in animal production.
- Synergetic effects with antibiotics of nanocapsuled EOs.

Zhang L et al. 2022

## External otitis pathogens

- *Origanum vulgare*, *Satureja montana*, *Thymus vulgaris*, + mixture 3 components,
- 47 clinical bacterial strains (*Staphylococcus sp.*, *Streptococcus sp.*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumoniae*, *Serratia marcescens*)
- 5 *Malassezia pachydermatis* strains,
- Mixture was active against all bacterial (except one *P. aeruginosa* strain) and fungal tested isolates.

Ebani, V.V.; et al (2023 )Vet. Sci.



# Veterinary in vitro research

## Ringworm in CA

| HE                            | CMI    | CMF(fongicide) |
|-------------------------------|--------|----------------|
| <i>Litsea cubeba</i>          | 0,5 %  | 0,75 %         |
| <i>Pelargonium graveolens</i> | 0,5 %  | 1,5 %          |
| <i>Illicium verum</i>         | 2,0%   | 2,5 %          |
| <i>Foeniculum vulgare</i>     | 2,5%   | 3 %            |
| Mixture                       | 0,25 % | 0,5 %          |



Nardoni, S., et al. (2015). Susceptibility of *Microsporum canis* arthrospores to a mixture of chemically defined essential oils: a perspective for environmental decontamination. Z. Naturforsch.,

## Urinary tract pathogens

- *Illicium verum*,
  - *Ocimum basilicum*,
  - *Origanum vulgare* L.,
  - *Salvia sclarea*,
  - *Thymus vulgaris* L
- > against multidrug-resistant strains of *Escherichia coli*, *Enterococcus spp.*, *Candida albicans* and *Candida famata*



Ebani et al. (2018) Antimicrobial Activity of Five Essential Oils against Bacteria and Fungi Responsible for Urinary Tract Infections - Molecules

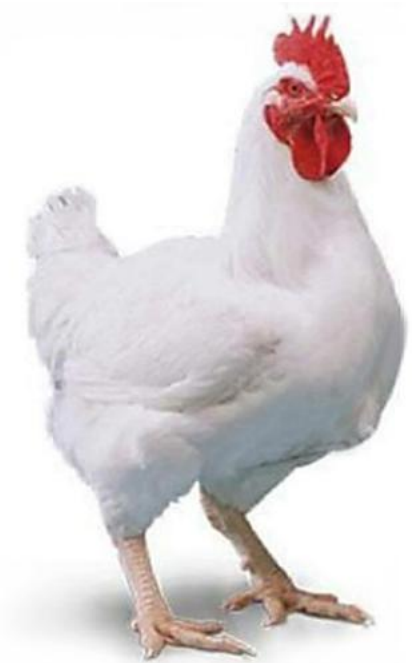
# *Boswellia serrata* in broiler chickens



<https://www.betternutrition.com/>

200 Ross 308 broiler chickens (1 day old) assigned to 4 groups :

- Standardized feed with 0, 0,5%, 1% and 2 % concentration in *Boswellia serrata*
- 2 and 2.5% addition of the *B. serrata* resin
  - Decreased ether extract and calorific value in breast and drumstick muscles,
  - Increase concentrations in Ca and Mg content in drumstick muscles and liver
  - Decreased muscular Cu and Zn in drumstick muscles
- Contributes to the maintenance of appropriate homeostasis in the broiler organism



Al-Yasiry ARM, et al (2017) . Effect of *Boswellia serrata* Resin Supplementation on Basic Chemical and Mineral Element Composition in the Muscles and Liver of Broiler Chickens. Biol Trace Elem Res. 179(2):294-303.

# Where can vets find reliable scientific evidence ?

## The Committee on Herbal Medicinal Products (HMPC)

When **EMA** publishes an **HMPC** opinion, this includes the **monograph**,



The screenshot shows the EMA website interface. At the top left is the EMA logo with the text "EUROPEAN MEDICINES AGENCY" and "SCIENCE MEDICINES HEALTH". To the right is a search bar labeled "Site-wide search" with a "GO" button and a link to "Advanced document search". Below the logo is a navigation bar with links: "Home", "Find medicine" (highlighted in blue), "Human regulatory", "Veterinary regulatory", "Committees", "News & events", "Partners & networks", and "About us". On the left side, there is a vertical menu with "Human medicines", "Veterinary medicines", and "Herbal medicines for human use" (highlighted in blue). The main content area shows the breadcrumb path: "Home > Find medicine > Herbal medicines for human use". Below this is the title "Herbal medicines for human use" with icons for "Email", "Print", "Help", and "Share". A descriptive text states: "This search allows you to find herbal substances that are designated for assessment by the European Medicines Agency's Committee on Herbal Medicinal Products (HMPC)."

Herbal medicinal product: Echinaceae purpureae herba

Echinacea purpurea (L.) Moench, Purple Coneflower Herb, F: Assessment finalised, Last updated: 17/02/2016

# Where can vets find reliable scientific evidence ?



**“Phytotherapy is the science-based medicinal use of plants and preparations derived from them, in the treatment, alleviation and / or prevention of disease or injury, according to recognised standards of quality, safety and efficacy.”**

# Where can vets find reliable scientific evidence ?

[www.repaas.org](http://www.repaas.org)



## Fiches plantes médicinales

Retrouvez les principales plantes utilisées en médecine vétérinaire, classée par ordre alphabétique selon leur nom français.

N'oubliez pas d'y apporter vos commentaires ou vos retours d'expérience clinique.

ABCDEFGHIJKLMNOPQRSTUVWXYZ

A - 7 Fiches



Ail

Plantes Médicinales



Alchémille

Plantes médicinales



ALOE

Plantes médicinales



Armoise Commune

Plantes médicinales



# Where can vets find reliable scientific evidence ?

[www.repaas.org](http://www.repaas.org)

## Données publiées en recherche fondamentale

L'HE de Tea tree a démontré *in vitro* et *in vivo* d'intéressantes propriétés antibactériennes chez *S. aureus* (y compris sur des MRSA, et des souches résistantes à la mupirocine), *E. coli*, *S. pyogenes*, *S. pneumoniae*, et agirait en inhibant la respiration cellulaire, et en altérant la transcription des protéines membranaires, altérant de ce fait son intégrité. Elle agirait également en stimulant les lymphocytes T, comme démontré *in vitro*.

Des propriétés antifongiques (candidoses, effet thérapeutique comparable au clotrimazole) et antivirales (virus de la grippe H1N1, virus de l'Herpes HSV-1 – utilisation de l'HE sur des filtres aériens, ou en aerosol) ont également été montrées tant *in vitro*, qu'*in vivo* chez l'Homme.

Chez l'Homme après application cutanée, l'HE de Tea tree diminue l'inflammation, par induction de la sécrétion d'IL-4 et d'IL-10, inhibition de l'effet de l'histamine au niveau cutané, et de la production des médiateurs de l'inflammation par les monocytes.



## Données cliniques publiées en médecine humaine

### Activité antibactérienne:

Dans deux études contrôlées, randomisées et réalisées en double aveugle impliquant un total de 266 patients présentant une contamination à MRSA, la moitié des patients ayant reçu de l'HE de Tea tree (onguent nasal contenant 4% à 10% d'HE de Tea tree en association avec une douche – solution à 5% d'HE de Tea tree, 1 fois/j pendant 5 jours, voit un effet positif (similaire au traitement de référence – mupirocine par voie nasale, et douche au Triclosan) sur la diminution de la charge bactérienne globale. Par contre, il n'y a pas d'effet de l'HE de Tea tree sur la charge bactérienne nasale. Aucun effet indésirable n'a été rapporté dans ces deux études.

En injection intra-osseuse (patient présentant une ostéomyélite résistante à plusieurs cures d'antibiotiques par voie IV), 1 ml / jour pendant 2 jours d'un mélange d'HE de tea tree, d'HE de citronnelle, d'eucalyptus, de clou de girofle, de thym, ainsi que du



# Where can vets find reliable scientific evidence ?

[www.repaas.org](http://www.repaas.org)

## Données cliniques publiées en médecine vétérinaire



CHIENS

Dermatologue

Niveau de preuve :  
Normal



CHATS

Entrez ici les utilisations

Niveau de preuve :  
Insuffisant



ÉQUIDÉS

Dermatologie

Niveau de preuve : Faible



BOVINS

Entrez ici les utilisations

Niveau de preuve : Faible



AUTRES

Entrez ici les utilisations

Niveau de preuve :  
Insuffisant



[Plus d'informations](#)

# How vets can build up clinical expertise ?

[www.repaas.org](http://www.repaas.org)

## Retours d'expériences

Envoyer un retour d'expérience

Votre adresse e-mail ne sera pas publiée. Les champs obligatoires sont indiqués avec \*

Écrivez votre retour ici

Nom \*

E-mail \*

Site web

☐ Enregistrer mon nom, mon e-mail et mon site dans le navigateur pour mon prochain commentaire.

# Current situation with actual legislation



“Assessment of marketing authorization applications for herbal veterinary medicinal products” (Request No 2014-SA-0081)



World wide access to

- Herbal products
- Essential oils
- Non scientifically controlled evidence



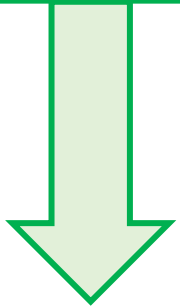
Farmers use feed supplements or home made preparations with little or no veterinary input

## **SAFETY**

For animals, users, and  
consumers

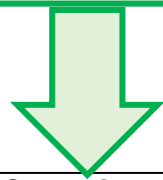
# Animal, user and consumer SAFETY

## QUALITY



- From harvesting to final product
- Known composition
- Batch numbers
- Contaminants
- Good preparation practices
- Prescription

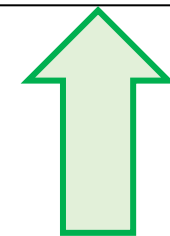
## TRACEABILITY



- Scientifically validated safety data
- Adapted administration procedures
- Consumer risk evaluation
- Veterinary follow up
- Efficacy assessment



## SAFE USAGE



## EFFICIENCY

Veterinary input :  
extemporaneous  
preparations

# Potential hazards taken into account

- Potential safety issues
  - related to the raw materials used
  - related to contamination during preparation
  - related to overdosing of raw materials
  - related to incorrect labeling.
- Risks for the vet/nurse preparing the product and the user of the preparations during handling.

**QUALITY – SECURITY - TRACABILITY**

**AND !! Consumer Safety**

# Problematics

- Only 120 plant substances listed in Table 1 (MRL)
  - One third is reserved for homeopathic use
  - Only 21 essential oils, some of which are reserved for topical use
  - Mandatory withdrawal time (doubled for organic production)
- Prescription restrictions in production animals
- No short-term prospects

| Huile essentielle  | Nom générique (latin)            |
|--------------------|----------------------------------|
| TOUTES VOIES       |                                  |
| Angélique (racine) | Angelicae radix aetheroleum*     |
| Anis               | Anisi aetheroleum*               |
| Carvi              | Carvi aetheroleum*               |
| Clou de girofle    | Caryophylli aetheroleum*         |
| Cannelle feuille   | Cinnamomi cassiae aetheroleum*   |
| Cannelle Ceylan    | Cinnamomi ceylanici aetheroleum* |
| Citron             | Citri aetheroleum*               |
| Citronnelle        | Citronellae aetheroleum*         |
| Coriandre          | Coriandri aetheroleum*           |
| Eucalyptus         | Eucalypti aetheroleum*           |
| Fenouil            | Foeniculi aetheroleum*           |
| Laurier noble      | Lauri folii aetheroleum*         |
| Mélisse            | Melissae aetheroleum*            |
| Menthe des champs  | Menthae arvensis aetheroleum*    |
| Menthe poivrée     | Menthae piperitae aetheroleum*   |
| Romarin            | Rosmarini aetheroleum*           |
| Thym               | Thymi aetheroleum*               |

\* aetheroleum : nom générique latin utilisé dans les textes législatifs anglo-saxons pour définir les huiles essentielles.

## NO OTHER ESSENTIAL OILS MAY BE USED IN FOOD-PRODUCING ANIMALS

| VOIE TOPIQUE UNIQUEMENT             |                                            |
|-------------------------------------|--------------------------------------------|
| Cyprès                              | Cupressi aetheroleum*                      |
| Lavande                             | Lavandulae aetheroleum*                    |
| Térébenthine                        | Terebinthinae aetheroleum*<br>rectificatum |
| UNIQUEMENT CHEZ L'ANIMAL NOUVEAU NÉ |                                            |
| Noix de muscade                     | Myristicae aetheroleum*                    |

**Eggs and milk: 7 days**  
**Meat, fat, and offal**  
**from poultry and**  
**mammals: 28 days**

**NO OTHER ESSENTIAL OILS CAN BE USED IN FOOD-PRODUCING ANIMALS**

Text ANSES on MRL: <https://www.anses.fr/fr/content/limites-maximales-de-r%C3%A9sidus-lmr-de-m%C3%A9dicaments-v%C3%A9t%C3%A9rinaires>

# Medicinal plants listed in Table 1

|    | A                         | B                                 |
|----|---------------------------|-----------------------------------|
| 1  | Nom français              | Nom latin                         |
| 2  | Boldo                     | <i>Boldo folium</i>               |
| 3  | Liane du pérou, Tue-chien | <i>Candurango cortex</i>          |
| 4  | Poivron                   | <i>Capisci fructus acer</i>       |
| 5  | Quinquina rouge           | <i>Cinchonae cortex</i>           |
| 6  | Cannelle de Chine         | <i>Cinnamomi cassiae cortex</i>   |
| 7  | Cannelle de Ceylan        | <i>Cinnamomi ceylanici cortex</i> |
| 8  | Cardamome                 | <i>Elettaria cardamomum</i>       |
| 9  | Bourdain                  | <i>Frangula cortex</i>            |
| 10 | Gentiane                  | <i>Gentiana radix</i>             |
| 11 | Baie de genévrier         | <i>Juniperu fructus</i>           |
| 12 | Laurier noble             | <i>Lauri fructus</i>              |
| 13 | Lepsedezia                | <i>Lespedezia capitata</i>        |
| 14 | Lin                       | <i>Lini oleum</i>                 |

|    |                       |                                   |
|----|-----------------------|-----------------------------------|
| 15 | Marjolaine            | <i>Majoranea herba</i>            |
| 16 | Camomille allemande   | <i>Matricaria recutita</i>        |
| 17 | Mélisse               | <i>Melissa officinalis</i>        |
| 18 | Achillée millefeuille | <i>Millefolii herba</i>           |
| 19 | Boldo                 | <i>Peumus boldus</i>              |
| 20 | Chêne                 | <i>Quercus robur, pedunculata</i> |
| 21 | Quillaia              | <i>Quillaia saponines</i>         |
| 22 | Bois de Panama        | <i>Quillaja saponaria</i>         |
| 23 | Rhubarde              | <i>Rhei radix</i>                 |
| 24 | Romarin               | <i>Rosmarini folium</i>           |
| 25 | Sauge                 | <i>Salvae folium</i>              |
| 26 | Sureau noir           | <i>Sambucus nigra</i>             |
| 27 | Tilleul               | <i>Tiliae flos</i>                |
| 28 | Ortie                 | <i>Urtica urens</i>               |

# Recommendations : dedicated rooms

- Preparations using dried plants are made in a dedicated, well-ventilated area that is separate from liquid preparations.
- Liquid preparations are made in an area exclusively dedicated to this purpose for the duration of the preparations, with no staff circulation.
- The preparation area can be used to store raw materials. It must allow for their proper preservation (protected from light and dust).



# Recommendations : dedicated rooms

- During use
  - Warnings posted at entrances
  - Prevent entry by other persons
  - Maintain operator concentration.
- Adequate ventilation
  - Kitchen hood recommended
  - Appropriate Lighting
  - Appropriate temperature.
- Floors and surfaces should be smooth and easy to clean and disinfect.



**Entrée  
interdite**





Hotte

Plan de travail lisse,  
entretien facile  
large

Crédit photo: Dr Jouet – Redon (35)

# Recommendations : dedicated rooms

- Work surface
  - Sufficient surface area
  - Durable material
  - Area for storing containers and utensils to be cleaned after use
- Separate workspace: reserved for reading and writing documents,
- Storage elements
  - sufficient capacity
  - protected from dust and, if necessary, from light,
  - everything necessary for ongoing preparations
  - clean equipment, raw materials, packaging materials, manufacturing documents.
- Tank supplied with hot and cold water, smooth, resistant material, non-return siphon.



# Preparation tools

- EO and liquids :

- Burettes, test tubes, single-use syringes, exclusively intended for preparations with essential oils or liquid extracts.
- Opaque bottles, jars or sprays made of glass or plastic compatible with essential oils.
- Sourcing from specialist suppliers providing materials that do not alter the contents.



# Preparation equipment

- For dried plants:
  - Scale adapted to the quantities weighed.
    - stable on the horizontal table
  - Dedicated kneading machine.
  - Suitable bags for transporting and storing the preparation (e.g., plastic bags and paper overwrap).
  - Dosing devices for establishing an administration dose.



# Kneading machine ??



# Cleaning procedures

- Clean the test tubes with 70% denatured alcohol and rinse with water.
- Equipment is cleaned and disinfected promptly after preparation and stored in a clean, enclosed, designated area.
- Dust the work surfaces and equipment used for preparing dried plants with a vacuum cleaner.



# Recommendations: quality manager

- A veterinary quality manager per practice-clinic
  - responsible for all stages from ordering raw materials to storage.
- May delegate part of the actions necessary for the preparation of compounded medications to one or more persons, formally identified, and specifically trained for this purpose. Responsible for controlling all stages of preparation through document and finished product control.
- Control is formalized by a visa of documents relating to raw materials and preparations: register of receipts and register of preparations.



# Recommendations : training

- The veterinary quality manager is responsible for the periodic updating of knowledge for all personnel involved at every stage, from ordering raw materials to storing prepared products, including the maintenance of equipment and facilities.
- Staff are trained on quality requirements, with particular emphasis on the risks of errors. Staff training is continuously adapted to the specific tasks assigned to each individual.

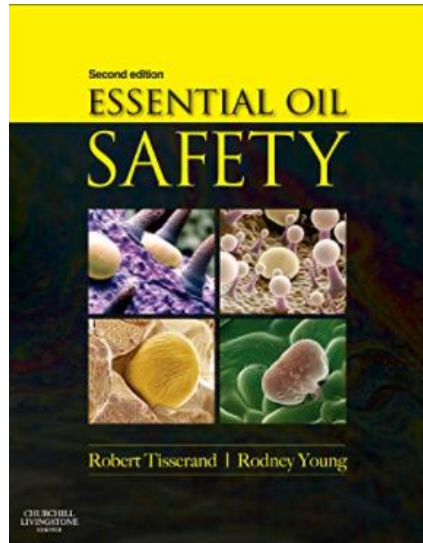


# Staff recommendations

- Appropriate attire is required, depending on the type of preparation.
- For essential oils, face, eye, and hand protection is necessary.
- For dried plants, a mask is required.



alamyimages.fr



<https://tisserandinstitute.org/safety/adverse-reaction-database/#home/>

Raw material  
supply

# Suppliers

- Laboratories / suppliers selected based on their ability to provide quality control (chromatography or detailed composition of crude essential oils)
- Written and maintained list of suppliers
- **Preferential use of pharmaceutical raw materials**
  - IF NOT AVAILABLE, detailed analysis mandatory
- The supplier must provide evidence of quality. This evidence will be collected in a dedicated binder.

# Selection criteria

- Quality control procedures
  - from culture, to harvesting, and storage methods
  - Quality control standards (titration, purity, contaminants)
  - Traceability
  - Product stability tests over time
- Labeling: exact and complete composition
  - Plant name: *Genus species*
  - Concentration
  - Excipients (caution with alcoholic solutions).



# Selection criteria

- Ease of use for both the individual and the client
- Consider :
  - price,
  - form,
  - dosage,
  - relevance of the mixture,
- doping substances?
- Scientific data, exchanges with colleagues,
- Personal experience...

# Unitary plants: which products ?

## Plantes sèches

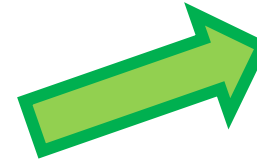


**Fresh Plants**

Dessications



**Dried Plants**



**Cut**



**Powder**



**Fresh plants > subjected to extraction processes**

# Une notion fondamentale : la **concentration** en plantes du produit fini

## SYRUPS

Dried or Fresh Plants



Ex 1:10 > 50 g ( $\approx$  50 ml) syrup = 5 g de plante

**DILUTION (10 à 100)**



## DRIED PLANTS



5 g product = 5 g plant

**1 for 1**

**! MIXTURES**



## EXTRACTS

Dried or Fresh Plants



5 g product  
= 10 to 300 g plants!

**CONCENTRATION**

**DER = drug extract ratio ex : 5:1 ; 20: 1 etc...  
or tracer concentration**



## Buds



200 g ( $\approx$  200 ml) de syrup = 1g de Bud

Informationnel  $\approx$  homéopathy

## BULLETIN D'ANALYSE



Lot n° : H19000958

Date de réception lot : 09/04/2019

| SPECIFICATIONS DE CONTRÔLE ETABLIES EN INTERNE |                                   |                |             |                     |
|------------------------------------------------|-----------------------------------|----------------|-------------|---------------------|
| PLANTE                                         |                                   | CURCUMA MADRAS |             |                     |
| PARTIE EMPLOYEE                                |                                   | RACINE         |             |                     |
| NOM LATIN                                      |                                   | Curcuma longa  |             |                     |
| FAMILLE                                        |                                   | ZINGIBERACEES  |             |                     |
| ORIGINE                                        |                                   | INDE           |             |                     |
| DDM                                            |                                   | mars-2021      |             |                     |
| Nature des contrôles                           |                                   | NORMES         | RESULTATS   | Identifiant analyse |
| IDENTIFICATION BOTANIQUE                       | Identification botanique          | Conforme       | Conforme    | Analyse interne     |
|                                                | Caractères organoleptiques        | Conforme       | Conforme    |                     |
|                                                | Caractères macroscopiques         | Conforme       | Conforme    |                     |
| DOSAGE                                         | Taux de curcumine                 | ≥ 2%           | 3,05%       | Analyse fournisseur |
| CONTRÔLE COLORANTS                             | Détection Sudan (I-II-III-IV) DYE | Non détecté    | Non détecté | Analyse fournisseur |
|                                                | Détection Para Red                | Non détecté    | Non détecté |                     |
|                                                | Détection Orange II               | Non détecté    | Non détecté |                     |
|                                                | Détection Rhodamine B             | Non détecté    | Non détecté |                     |
|                                                | Détection Butter yellow           | Non détecté    | Non détecté |                     |
|                                                | Détection Metanil yellow 36       | Non détecté    | Non détecté |                     |

|                             |                                                                                                                                                                                                                                                     |                   |                                                         |                                        |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------|----------------------------------------|
| CONTRÔLE<br>BACTERIOLOGIQUE | Micro-organismes aérobies à 30°C                                                                                                                                                                                                                    | ≤ 10 000 000      | 1 700 000                                               | Analyse fournisseur                    |
|                             | Levures - Moisissures /g                                                                                                                                                                                                                            | ≤ 100 000         | < 10 000                                                |                                        |
|                             | E. coli β-glucuronidase positive /g                                                                                                                                                                                                                 | ≤ 100             | < 10                                                    |                                        |
|                             | Anaérobies sulfito-réducteurs (46°C) /g                                                                                                                                                                                                             | ≤ 300             | < 10                                                    |                                        |
|                             | Listeria monocytogenes /25g                                                                                                                                                                                                                         | Absence           | Non détecté                                             |                                        |
|                             | Salmonella /25g                                                                                                                                                                                                                                     | Absence           | Non détecté                                             |                                        |
|                             | Staphylocoques à coagulase positive (37°C) /g                                                                                                                                                                                                       | ≤ 300             | < 100                                                   |                                        |
| MYCOTOXINES                 | Selon règlement (CE) n°1881/2006                                                                                                                                                                                                                    |                   |                                                         | Analyse fournisseur                    |
|                             | Aflatoxine B1                                                                                                                                                                                                                                       | ≤ 2,0 ppb (µg/kg) | < 1,0 ppb                                               |                                        |
|                             | Somme Aflatoxines B1/B2/G1/G2                                                                                                                                                                                                                       | ≤ 4,0 ppb (µg/kg) | < 1,0 ppb                                               |                                        |
|                             | Ochratoxines A                                                                                                                                                                                                                                      | ≤ 15 ppb (µg/kg)  | < 0,5 ppb                                               |                                        |
| PESTICIDES                  | Selon règlement (CE) n°396/2005                                                                                                                                                                                                                     |                   | Chlorpyrifos : 0,064 +/- 0,032 mg/kg<br>(LMR : 1 mg/kg) | Analyse Phytocontrol<br>n°R19041736_V0 |
|                             | EU pesticides database (screening 400 molécules sur demande + etephon)<br>( <a href="http://ec.europa.eu/sanco_pesticides/public/?event=homepage&amp;language=EN">http://ec.europa.eu/sanco_pesticides/public/?event=homepage&amp;language=EN</a> ) |                   | Methiocarbe (somme) : D < 0,1mg/kg                      |                                        |
|                             | Code LMR : 0840030 - catégorie "Curcuma / Safran des Indes"                                                                                                                                                                                         |                   |                                                         |                                        |

MATIERE PREMIERE CONFORME VIS-À-VIS DES ELEMENTS CI-DESSUS AU JOUR DE LA SIGNATURE DU PRESENT BULLETIN

Visa de la direction

*J. BEARD*  
*[Signature]*

Visa du responsable qualité

Docteur en pharmacie

*[Signature]*

# Analyse HE



Bulletin d'analyse

HUILE ESSENTIELLE  
**RAVINTSARA BIOLOGIQUE\***

BA- BHR02

\*Produit issu de l'Agriculture biologique certifié par FR-BIO-01

N° de lot : BHR02A20

Origine : Madagascar

Partie distillée : Feuille

Date de péremption : 01/2024

## Propriétés Organoleptiques :

Aspect : liquide limpide

Couleur : incolore

Odeur : Caractéristique, fraîche, cinéolée, aromatique

## Propriétés Physico-chimiques :

Densité à 20°C : 0.907

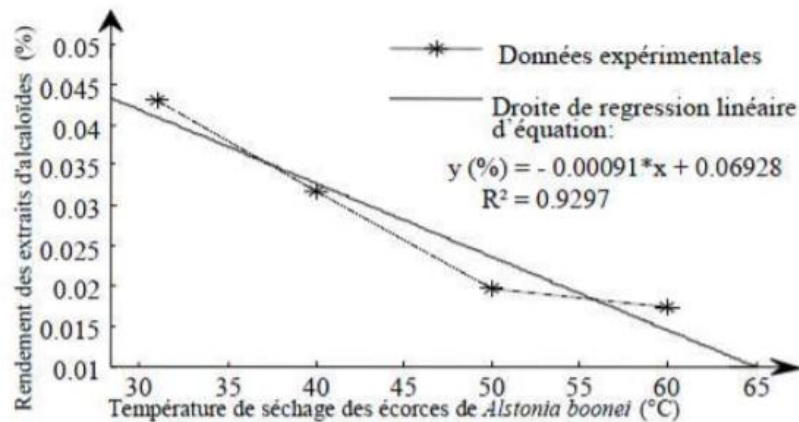
Indice de réfraction à 20°C : 1.465

Pouvoir rotatoire à 20°C : ND

| Constituants                         | %     |
|--------------------------------------|-------|
| $\alpha$ -PINENE + $\alpha$ -THUYENE | 4.91  |
| CAMPHERE                             | 0.18  |
| $\beta$ -PINENE                      | 3.10  |
| SABINENE                             | 13.21 |
| $\beta$ -MYRCENE                     | 1.41  |
| $\alpha$ -TERPINENE                  | 0.58  |
| LIMONENE                             | 0.70  |
| 1-8- CINEOLE                         | 58.78 |
| Cis- $\beta$ -OCIMENE                | 0.06  |
| $\gamma$ -TERPINENE                  | 0.97  |
| Trans- $\beta$ -OCIMENE              | 0.35  |
| p-CYMENE                             | 0.29  |
| TERPINOLENE                          | 0.27  |
| Cis-THUYANOL                         | 0.47  |
| TERPINENE-4-OL                       | 2.02  |
| $\beta$ -CARYOPHYLLENE               | 0.65  |
| $\delta$ -TERPINEOL                  | 0.62  |
| $\alpha$ -HUMULENE                   | 0.66  |
| $\alpha$ -TERPINEOL                  | 8.04  |
| BORNEOL                              | 0.26  |
| TOTAL                                | 97.53 |

# Drying conditions: example

- Blackcurrant leaves preparation:
  - Fresh or dried leaves at a maximum temperature of 60°C
- Homeopathic preparation: (French Pharmacopoeia)
  - Dry for 2 hours at 105°C



**Figure 1 :** Rendement des extraits d'alkaloïdes totaux en fonction de la température de séchage

influence of drying temperature on the active principles (total alkaloids) of the medicinal plant *Alstonia boonei* WILD, an antimalarial plant.

# Raw material supply, orders and registration

- HE order : request chromatography for available batches.
  - The veterinarian then selects the batch best suited to their needs and validates the relevant chromatography.
- Purchase orders containing the desired batch numbers are archived.
- Validated analysis and chromatography reports are archived in a dedicated binder after validation by the responsible veterinarian.
- Orders are tailored to consumption to minimize bottle opening times, particularly for essential oils, which are sensitive to oxidation and evaporation of active ingredients.

# Entry register

- Recording of raw material receipts
  - Registration number in this register
  - Date of receipt
  - Receiver
  - Description of raw material
  - Supplier
  - Batch number
  - Quantity received
  - Best before date
  - Confirmation, after verification in the dedicated file, of the presence of the analysis corresponding to the batch number.

| Date  | N°ordre | ASV | Produit          | Fournisseur | Quantité   | N° lot     | P/S      | Analyse |
|-------|---------|-----|------------------|-------------|------------|------------|----------|---------|
| 26/06 | 66      | CT  | Muske pour P     | Caillan     | 1kg        | H18001116  | 08/10/18 | O       |
|       | 67      | -   | Produit pour P   | -           | 1kg        | H113002340 | 01/10/18 | O       |
|       | 68      | -   | Remain pour P    | -           | 1kg        | H13001077  | 06/10/18 | O       |
| 26/07 | 69      | -   | Hu d'olive       | LCA         | 5L         | 0440383    | 06/10/18 | N       |
|       | 70      | -   | Peanut           | Vismine     | 500ml      | 0441113    | 03/12/18 | N       |
|       | 71      | -   | Peanut           | -           | -          | 045580     | 10/12/18 | N       |
|       | 72      | -   | Peanut des Pies  | -           | 2x500ml    | 045583     | 10/12/18 | N       |
|       | 73      | -   | Quercus          | -           | 2x500ml    | 042173     | 10/12/18 | N       |
|       | 74      | -   | Ginkgo           | -           | 2x500ml    | 046003     | 03/12/18 | N       |
| 31/08 | 75      | -   | Pâte corse       | Caillan     | 1kg        | H13001657  | 03/12/18 | O       |
|       | 76      | -   | Pâte corse       | -           | 02kg       | H13001338  | 05/12/18 | O       |
|       | 77      | -   | Pâte corse       | -           | 1kg        | H13002054  | 03/12/18 | O       |
|       | 78      | -   | Pâte corse       | -           | 1kg        | H13001217  | 05/12/18 | O       |
|       | 79      | -   | Pâte corse       | -           | 1kg        | H13001018  | 04/10/18 | O       |
|       | 80      | -   | Pâte corse       | -           | 1kg        | H13001333  | 05/12/18 | O       |
|       | 81      | -   | Pâte corse       | -           | 1kg        | H13000383  | 02/12/18 | O       |
|       | 82      | -   | Pâte corse       | -           | 1kg        | H13001077  | 04/10/18 | O       |
| 16/10 | 83      | -   | Pâte corse       | Vismine     | 500ml      | 125        | 05/12/18 | N       |
| 20/10 | 84      | -   | Hu d'olive       | Knocorp     | 3L         | 3B         | 10/12/18 | N       |
|       | 85      | -   | Hu d'olive       | -           | 5L         | 1A         | 05/12/18 | N       |
| 24/10 | 86      | -   | Cassis           | Vismine     | 500ml      | 050834     | 05/12/18 | N       |
|       | 87      | -   | Quercus          | -           | 500ml      | 042173     | 06/12/18 | N       |
|       | 88      | -   | Ginkgo           | -           | -          | 046003     | 03/12/18 | N       |
|       | 89      | -   | Pâte corse       | -           | 500ml (x2) | 042173     | 08/12/18 | N       |
|       | 90      | -   | Pâte corse       | -           | 500ml      | 044821     | 10/12/18 | N       |
|       | 91      | -   | Pâte corse       | -           | 500ml      | 045583     | 10/12/18 | N       |
|       | 92      | -   | Valluane         | -           | 500ml      | 050844     | 11/12/18 | N       |
| 23/10 | 93      | -   | HE Hanika        | LCA         | 250ml      | CH12183    | 05/12/18 | O       |
| 27/10 | 94      | -   | HE Hanika        | LCA         | 250ml      | 070EA903   | 05/12/18 | O       |
|       | 95      | -   | HE Ginkgo        | -           | 50ml       | 176IE904   | 01/12/18 | O       |
|       | 96      | -   | HE Ginkgo        | -           | 50ml       | 304JA801   | 11/12/18 | O       |
|       | 97      | -   | HE Ginkgo        | -           | 250ml (x2) | 3403B804   | 05/12/18 | O       |
|       | 98      | -   | HE Ginkgo        | -           | 250ml      | 330QB804   | 05/12/18 | O       |
| 30/10 | 99      | -   | Chardon H. Pache | Caillan     | 1kg        | H18002734  | 11/12/18 | O       |
|       | 100     | -   | Ginkgo P         | -           | 1kg        | H13002213  | 11/12/18 | O       |
|       | 101     | -   | Pâte corse P     | -           | 1kg        | H18002333  | 10/12/18 | O       |
|       | 102     | -   | Pâte corse P     | -           | 1kg        | H18002840  | 10/12/18 | O       |
|       | 103     | -   | Cassis P         | -           | 2kg        | H18002265  | 10/12/18 | O       |
|       | 104     | -   | Pâte corse P     | -           | 1kg        | H18002054  | 03/12/18 | O       |

# Preparation of preparations !

- Each preparation is made according to the prescription.
- Regularly prescribed preparations can be made in advance. They are prepared as needed and follow the same preparation rules as other preparations.



# Prep conditions

- The technician/vet ensures the preparation area is ready for use (clean room and surfaces, free of any products or documents).
- They put on the designated preparation attire and change it as needed (gloves, mask, and dedicated lab coat).
- They activate the ventilation system.
- They change gloves and clean the preparation surfaces between each batch to prevent cross-contamination.
- The technician/vet avoids leaving the room during preparation sessions.

# Modus operandi

- Each preparation has a detailed description sheet specifying:
  - The raw materials to be used
  - Their dosages
  - The diluent to be used, if applicable
  - For liquid products, the bottles to be used, including the type of container, the bottle volume, and the type of cap
  - For solid products, the type and size of the sachets.



# Labelling

Composition (detailed plant name, genus, species, chemotype if applicable)

Route of administration - dosage

Address of the professional residence of the nurse/vet

Withdrawal period for food-producing animals.

Shelf life, established based on knowledge of the preparation's stability. This expiry date must be earlier than that of the raw materials and cover the duration of the treatment.

**EXTRAITS DE PLANTES FRAICHES N° 612**

Fumeterre/Réglisse

Date 18/12/18

**USAGE VETERINAIRE**  
**Bien agiter avant emploi**

**Faire avaler 20 ml 1 fois/jour – 21 jours**  
**Puis 20 ml 1 fois/jour – 5 j /7- 3 sem**

Isabelle Lussot-Kervern - Docteur Vétérinaire

20 Bvd Geoffroy Martel 49240 Avrillé

manufacturing batch number

"Veterinary use only" written on the label. Prescription required. The prescription must be kept for at least 5 years. Follow the prescribed dosage." This label is printed in black on a red background. At a minimum, the phrase "veterinary use" is used on small bottles where a larger label is not possible.

Precautions for use when required – For example, for liquid mixtures: "shake before use" (variable density of constituents); for essential oils: "wear gloves"; for all: "store away from light"

# Labelling

**EXTRAITS DE PLANTES FRAICHES N° 612**

Fumeterre/Réglisse

Date 18/12/18

**USAGE VETERINAIRE**

**Bien agiter avant emploi**

**Faire avaler 20 ml 1 fois/jour – 21 jours**

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Isabelle Lussot-Kervern - Docteur Vétérinaire

20 Bvd Geoffroy Martel 49240 Avrillé

- If there is not enough space on the label, these precautions should be included on the prescription; practitioners prescribing herbal substances are encouraged to systematically include precautions for use on their prescriptions to ensure the safety of their prescriptions.
- Once all the information has been written, a wide, transparent piece of tape is covered with tape to protect the label from moisture.

# Labelling

Préparation d'HE OED                      100      ml

- - Huile de pépin de raisin
- - Cupressus sempervirens
- - Litsea cubeba
- BIEN AGITER / Port de gants recommandé.
- Application locale en massage à raison de 5 ml
- matin et soir sur la mamelle pendant 3 jours.
- Délai d'attente : lait 0 ou 7 j Viande : 0 ou 28 j ?

Usage Vétérinaire à ne délivrer que sur ordonnance devant être conservée 5 ans –  
respecter les doses prescrites.....

N° de lot : 413      Date fab. : 05/19      Date per. : 05/20

Coordonnées du cabinet vétérinaire

Crédit : Dr Daspet – Dr Jouet SNGTV

# Recording of preparations

- Preparation log where all data relating to preparations are recorded:
  - The date of preparation;
  - Registration number = Batch number (which will be entered on the prescription);
  - Veterinarian responsible for the preparation;
  - Other participants, if applicable;
  - The composition (or reference to the formula) and Batch number of the raw materials used;
  - The quantity prepared; The expiration date; The name of the client and recipient animals (or "stock" (if prepared in advance)).

| Date  | Lot  | Veto | ASV | Composition                                                  |
|-------|------|------|-----|--------------------------------------------------------------|
| 6/09  | 4378 | K    | CJ  | Prepa M1 litée 330QB804 HU Tournesol lot 3B                  |
|       | 4379 | "    | "   | Prepa 01 litée 330QB804 Cypress 082SA802 HU Tournesol lot 3B |
|       | 4380 | "    | "   | Prepa M4 litée 330QB804 Palmeron 310DB804 origon 065LA801    |
|       | 4381 | "    | "   | Prepa M5 Manka CHM21B9                                       |
| 07/09 | 4382 | M    | nn  | Prepa Pelosse 012217 (310ml) Reglisse 130 (310ml)            |
| 07/09 | 4383 | n    | nn  | Prepa Valerian 125 (150ml) O.S. 844 (150ml)                  |
| 9/9   | 4384 | K    | K   | Achille 1.1 (150ml) 46561 - 100ml                            |

# Storage of prepared products

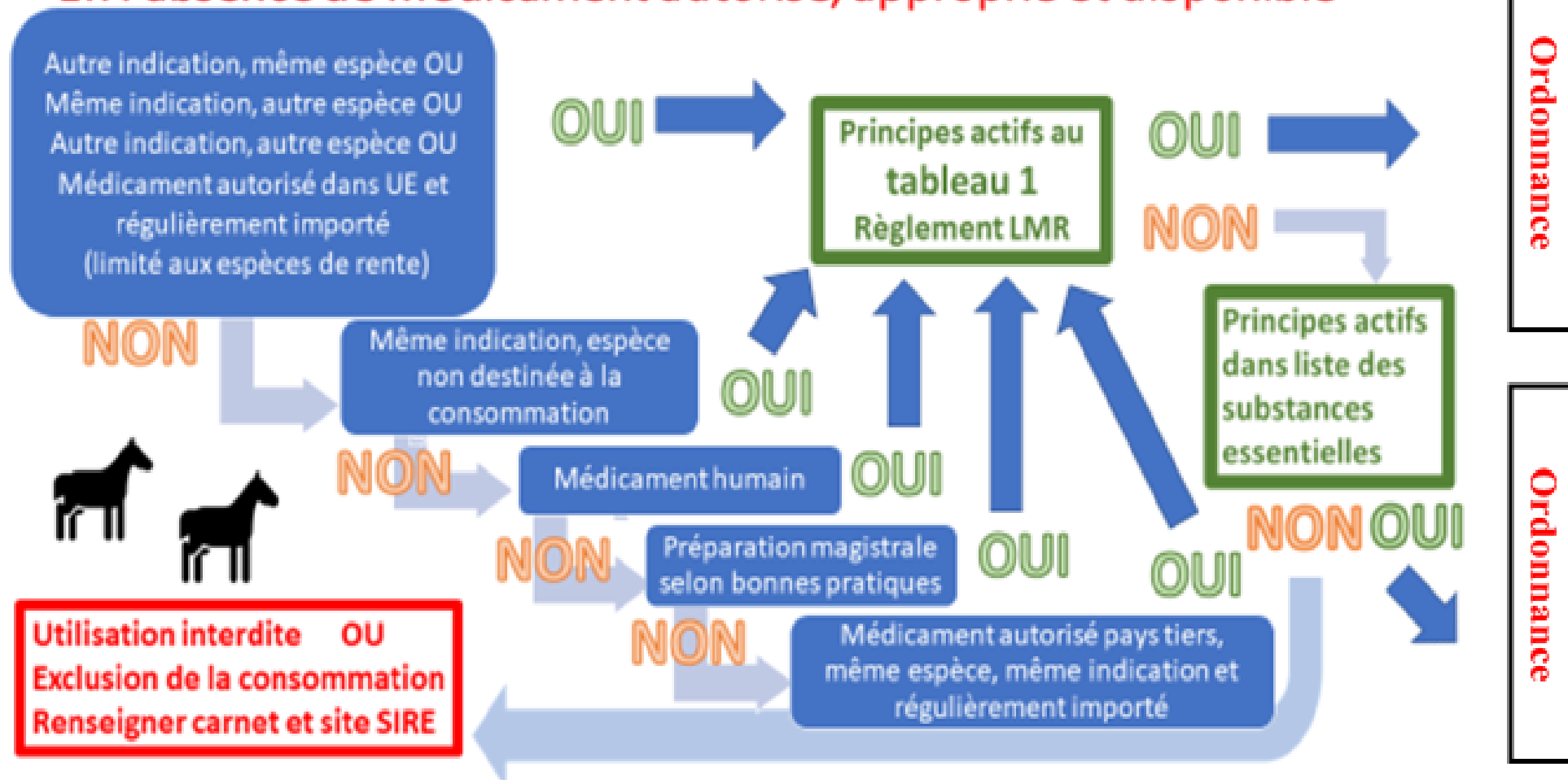
- Dedicated areas or locations ensuring their proper preservation
  - protected from light and dust,
- At an appropriate ambient temperature.
- Not accessible to the public.
- Magistral preparations prepared in advance are kept to a minimum to minimize stock levels.
- Finished product control
- Regular visual inspections of preparations and regular checks of expiration dates are carried out.
- The veterinarian refers to stability analyses if available and adjust expiration dates as needed.



# Extemporaneous preparation in the "Casacade"

## Equidés destinés à la consommation

En l'absence de médicament autorisé, approprié et disponible





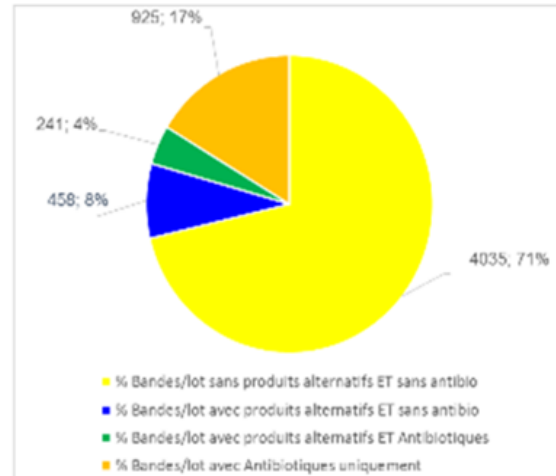
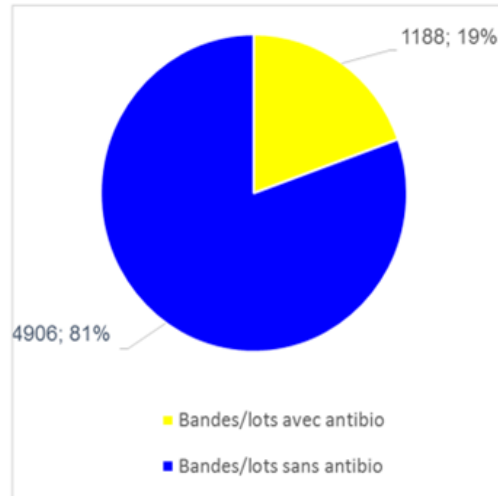
# **Veterinary uses**



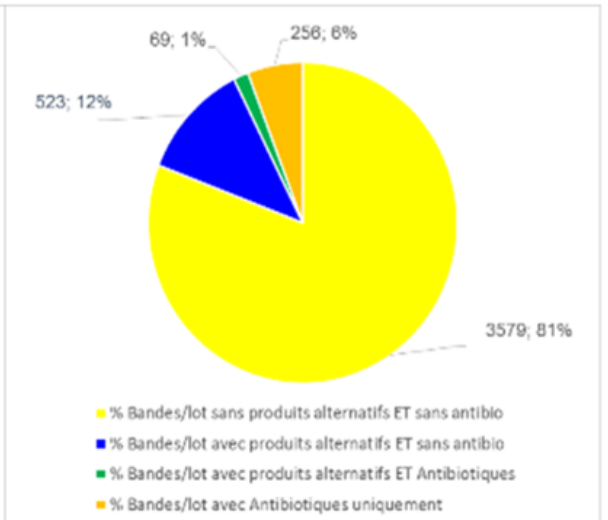
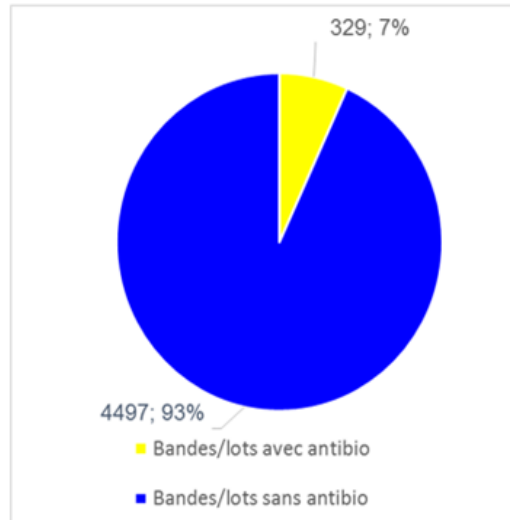
# BROILER STANDARD-CERTIFIED-LABEL(FREE RANGE° LABOVET CONSEIL

01/01/2018-31/12/2018

01/01/2024-31/12/2024



19% of chicken batches were treated with an antibiotic 7 years ago  
8% of lots with Alternatives with cure



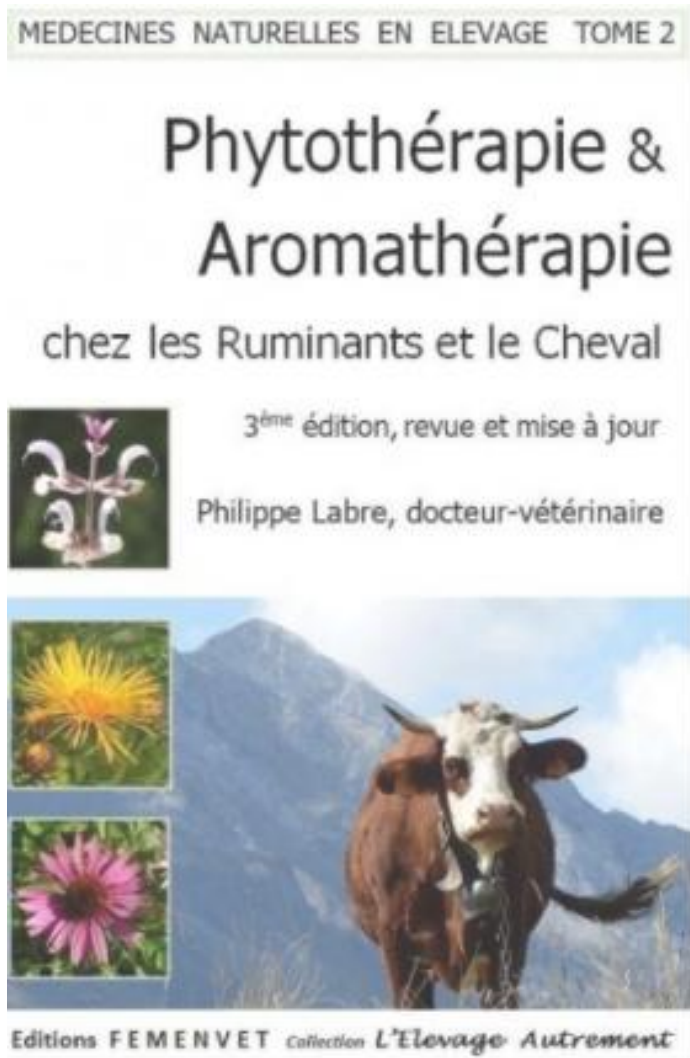
7% of chicken batches are treated with an antibiotic today and 12% of batches with Alternatives with cure.

# Uses in veterinary medicine



- Capsules
  - 50 % yeast, argile, spiruline
  - HE : 1 à 6 drops
- Exemples
  - Gastro-enteritis
    - Clove, Cinnamon, ravintsara, tea tree
    - 1 drop of each EO /20 kg: 1 capsule TID 3 days max, then alternate days
  - To 'regenerate' the liver
    - Thymus thujanol, carot, rosmarinus verbenone, lovage or celery
    - 1 drop of each EO /20 kg: 1 capsule BID 10 days 1 capsule SID 1 month

# Uses in veterinary medicine



- Tracheo-bronchitis, broncho-pneumoniae, strangles
  - Thym thymol ou ajowan 20 drops
  - Origan 20 drops
  - Tea tree 40 drops
  - Euc. Radié ou globuleux 40 drops
  - Niaouli 30 drops
  - Pinus sylvestris 30 drops
- In 3 tablespoons of VO BID (in case of severe infection sévère repeat twice initially 2 hours apart)
- Horses 2/3 of the doses with more honey

6 ml d'HE

## Uses in veterinary medicine



on « Preparation of the application dossier for the establishment of maximum residue limits (MRLs) of tea tree essential oil (EO) for inclusion in table 1 of regulation (EU) No 37/2010.»

**Based on tradition of use, (which might comply with the conditions depicted in directive 2004/24/EC for herbal medicinal products of human use (Anses 2016)).**

The main usual doses, as noted for field uses (Anses 2022),

- **Oral route:**
  - up to 1 mL of tea tree EO/day in bovine (approx. 885 - 906 mg/day),
  - up to 0.2 mL in sheep and goat (approx. 177 - 181 mg/day) (diluted in fixed oil);
- **Cutaneous use:**
  - 10 drops (approx. 250 - 400 µL, 220 - 360 mg), twice a day in bovine,
  - 5 drops (approx. 125 - 200 µL, 110 - 330 mg), twice a day in sheep and goat.

**Empirical observations from (Labre 2012),**

- Vaginal use (ovules) is mentioned in cows (1 mL/day) for metritis; •
- Maximum level of use is for bovine, with 50 drops/day (1.25 - 2 mL/day, oral route, 5 % dilution);

Tea tree EO is usually proposed in association with other EOs.

# Dermatology



Powder



Echinacea



Liquorice

Solution : oils/ creams + essential oils





## Harpagophyton

*Harpagophytum procumbens*

Harpagoside



1 à 4 g/d



## Curcuma

*Curcuma longa*

Curcumine



1 à 4 g/d



## Boswellie

*Boswellia serrata*

Acides boswelliques



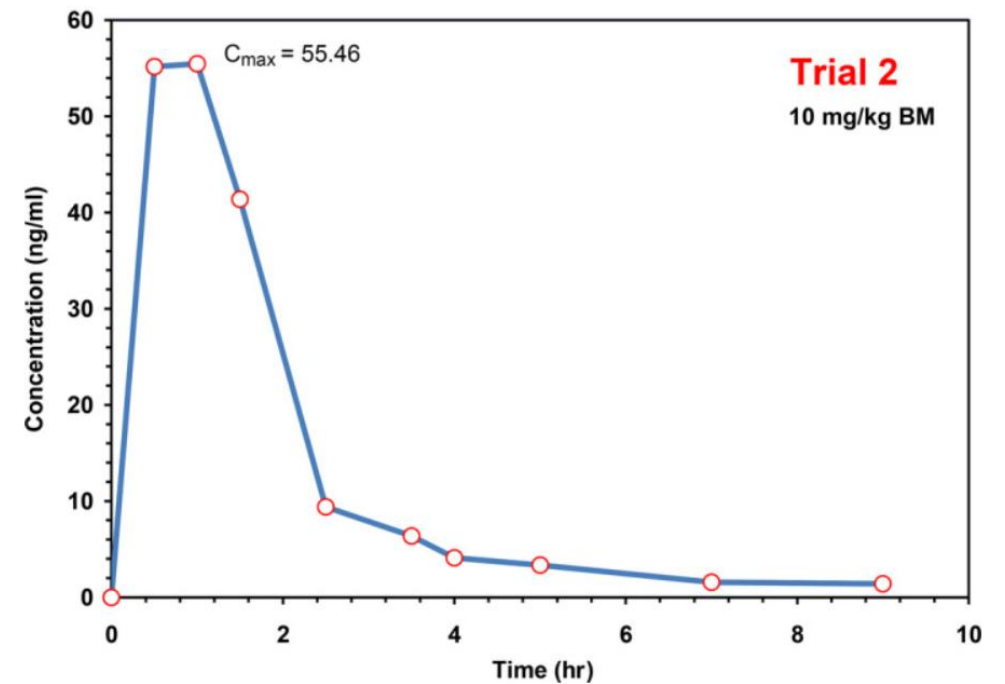
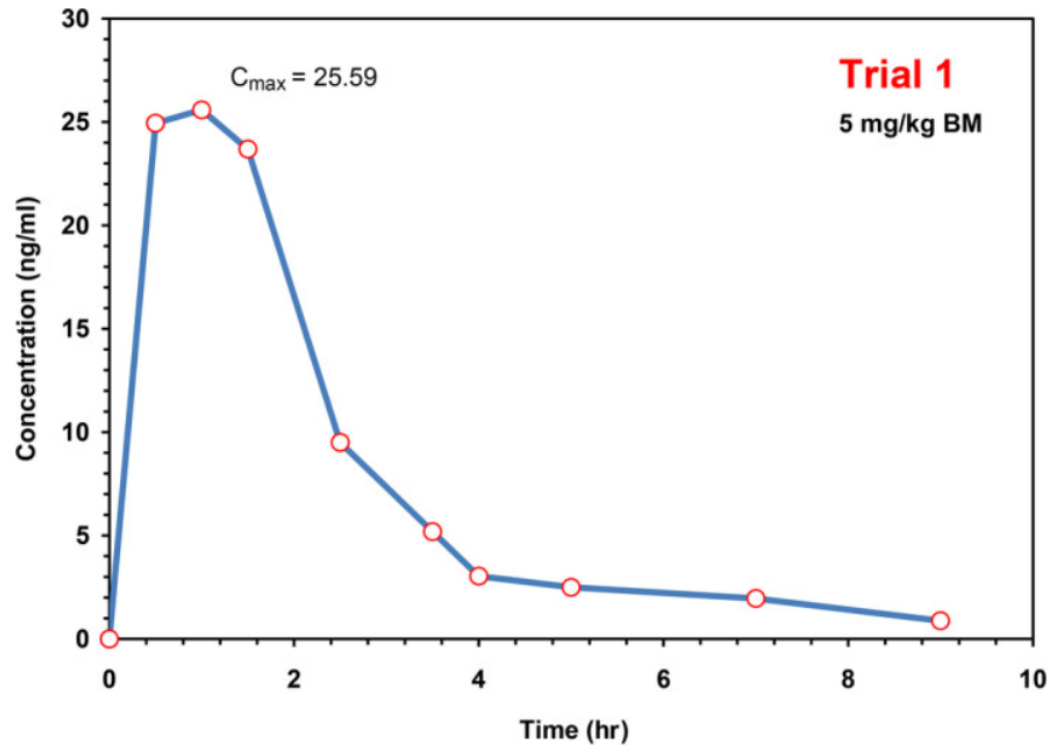
0,9 à 3,6 g/d



10 à 20 g/d  
CV 500 kg

# Harpagoside in horse and human

Axmann S, et al . (2019)



The human and equine pharmacokinetic data for these extracts can be directly compared.

# EO application « mesotherapy 'like' »



## Chronic digestive Inflammations

Luca, S., et al (2017)

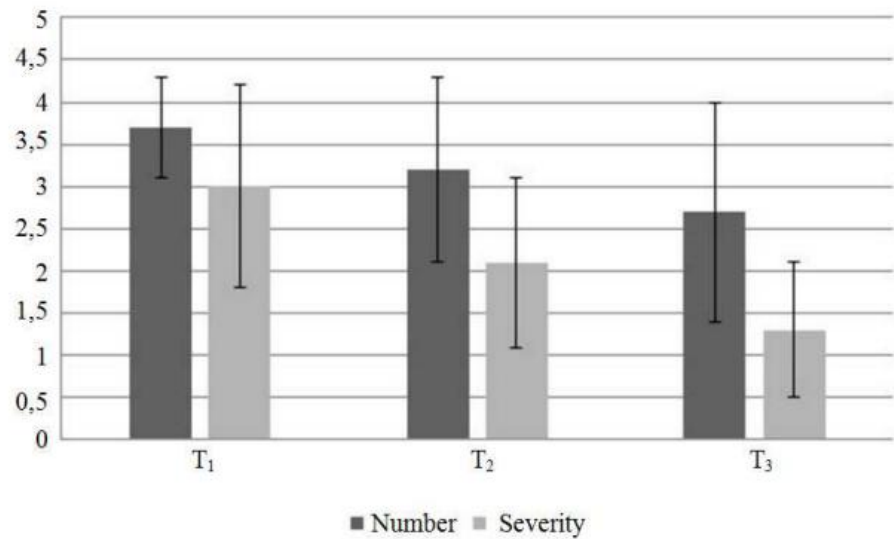


Fig. 1. Average score regarding number and severity of lesions of the three operators



Réglisse



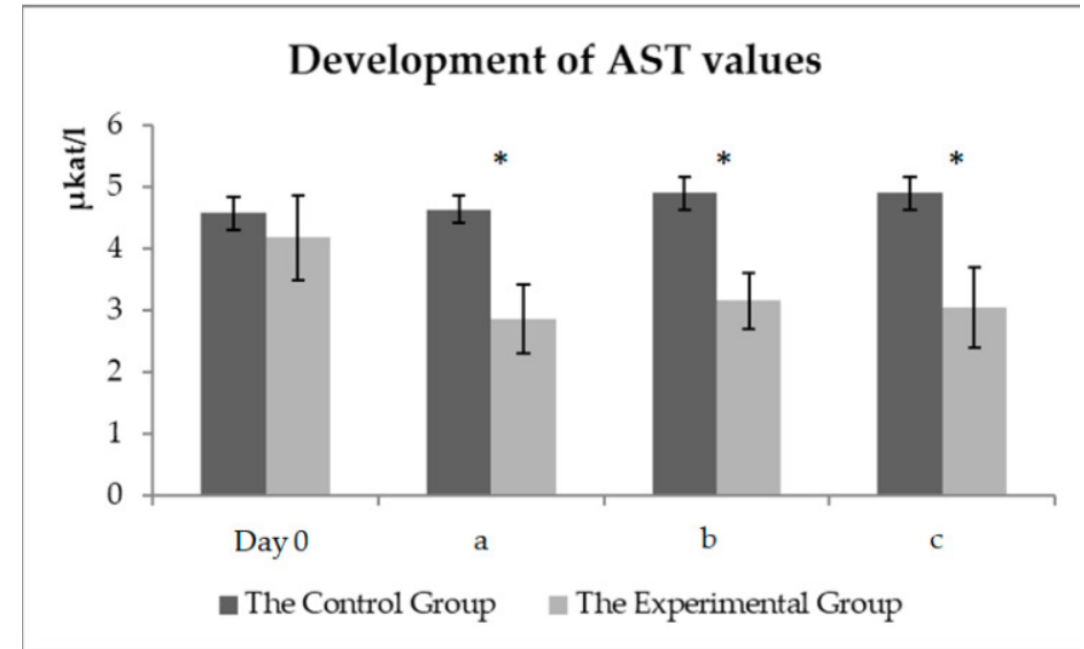
Aloe vera

- Guérison + amélioration
  - 60 % (21-91 %) AV
  - 86 % (50-98 %) O

Bush et al (2017)

## Liver issues

Dockalova H et al (2021)



*Silybum marianum*





*Glycyrrhiza glabra*



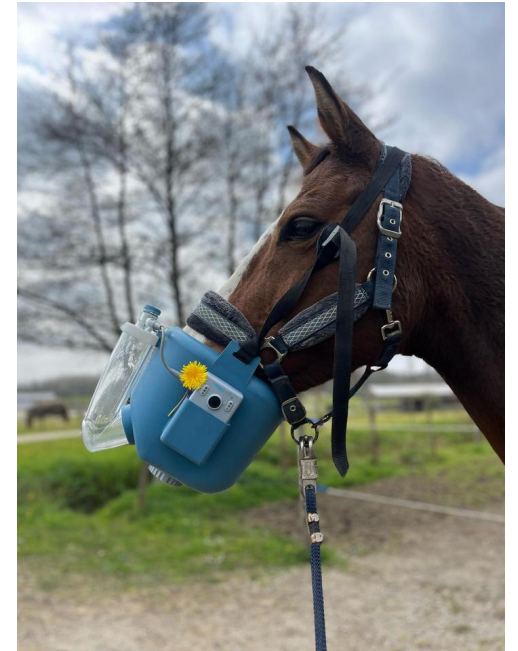
*Nigella sativa*



*Plantago lanceolata*



*Eucalyptus radiata* EO





**4 g de Maca/100 kg (60 j)**

- Total sperm count
- ↗ Sperm concentration
- ↗ Resistance to cooling and storage
- Improved overall and progressive sperm motility.

***Vitex agnus-castus***

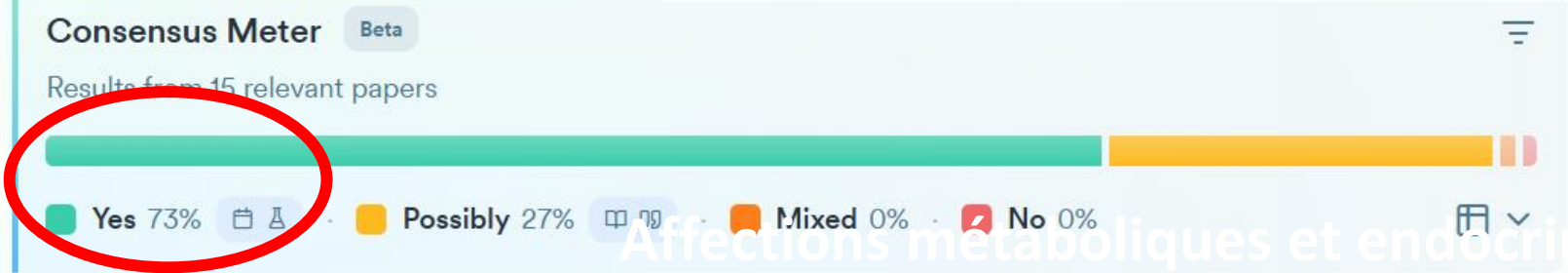
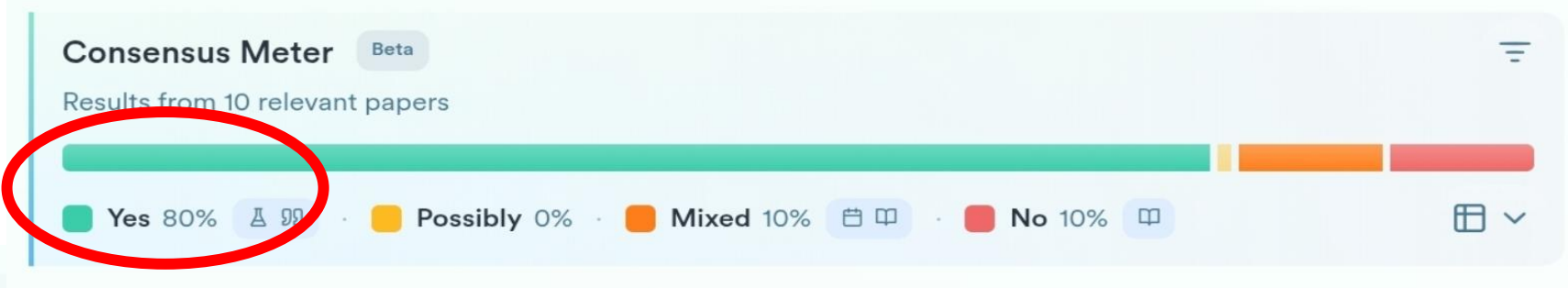
**Monk's pepper**

**Beech J et al AAEP 2002**

Can herbal supplement help lower  
hyperglycemia ?



Is Rhodiola rosea root extract beneficial during physical activity?



Affections métaboliques et endocrinie

# Ethnopharmacology – Traditions



Contents lists available at [ScienceDirect](#)

Journal of Ethnopharmacology

journal homepage: [www.elsevier.com/locate/jethpharm](http://www.elsevier.com/locate/jethpharm)



What can we learn from past and recent Bavarian knowledge for the future development of European veterinary herbal medicine? An ethnoveterinary study

Theresa Schlittenlacher<sup>a,\*</sup>, Gabriela Knubben-Schweizer<sup>b</sup>, Maja Dal Cero<sup>c</sup>, Christan R. Vogl<sup>d</sup>, Ariane Maeschli<sup>e</sup>, Matthias Hamburger<sup>f</sup>, Michael Walkenhorst<sup>e</sup>

<sup>a</sup> Research Institute of Organic Agriculture FiBL, Kesseler Straße 1a, Postfach 900163, D-60441, Frankfurt am Main, Germany

<sup>b</sup> Clinic for Ruminants with Ambulatory and Herd Health Services, Ludwig-Maximilians-Universität Munich, Oberschleißheim, Germany

<sup>c</sup> University of Zurich, Department of Systematic and Evolutionary Botany, Zürich, Switzerland

<sup>d</sup> Division of Organic Farming, Department of Sustainable Agricultural Systems, University of Natural Resources and Life Sciences (BOKU), Vienna, Austria

<sup>e</sup> Department of Livestock Science, Research Institute of Organic Agriculture FiBL, Ackerstrasse 113, Postfach, CH, 5070, Frick, Switzerland

<sup>f</sup> Pharmaceutical Biology, Pharmazentrum, University of Basel, Basel, Switzerland

| Species          | Weight   | Metabolic bodyweight (MBW) |
|------------------|----------|----------------------------|
| Adult cattle     | 650 kg   | 128.7 kg <sup>0.75</sup>   |
| Calf             | 75 kg    | 25.5 kg <sup>0.75</sup>    |
| Pig              | 200 kg   | 53.2 kg <sup>0.75</sup>    |
| Young pig        | 15 kg    | 7.6 kg <sup>0.75</sup>     |
| Donkey           | 200 kg   | 53.2 kg <sup>0.75</sup>    |
| Sheep            | 80 kg    | 27.0 kg <sup>0.75</sup>    |
| Young sheep      | 20 kg    | 9.5 kg <sup>0.75</sup>     |
| Medium-sized dog | 25 kg    | 11.2 kg <sup>0.75</sup>    |
| Rabbit           | 3 kg     | 2.3 kg <sup>0.75</sup>     |
| Hen              | 1 kg     | 1.0 kg <sup>0.75</sup>     |
| Rat              | 0.175 kg | 0.3 kg <sup>0.75</sup>     |
| Human            | 65 kg    | 22.9 kg <sup>0.75</sup>    |

$$\text{dailydose} \left( \frac{\text{g}}{\text{kg}^{0.75}} \right) = \frac{\text{dryplant equivalent (g) per application} \cdot \text{repetition per day}}{\text{metabolic bodyweight (kg}^{0.75}\text{)}}$$

(1)



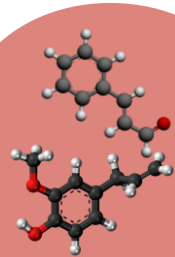
# **Veterinary research projects**

# AROMAT-EQ Project

- A 12-month in vitro study conducted between 2021 and 2022



Control the presumed heterogeneity of batches by comparing the chemical composition of essential oils from different suppliers.

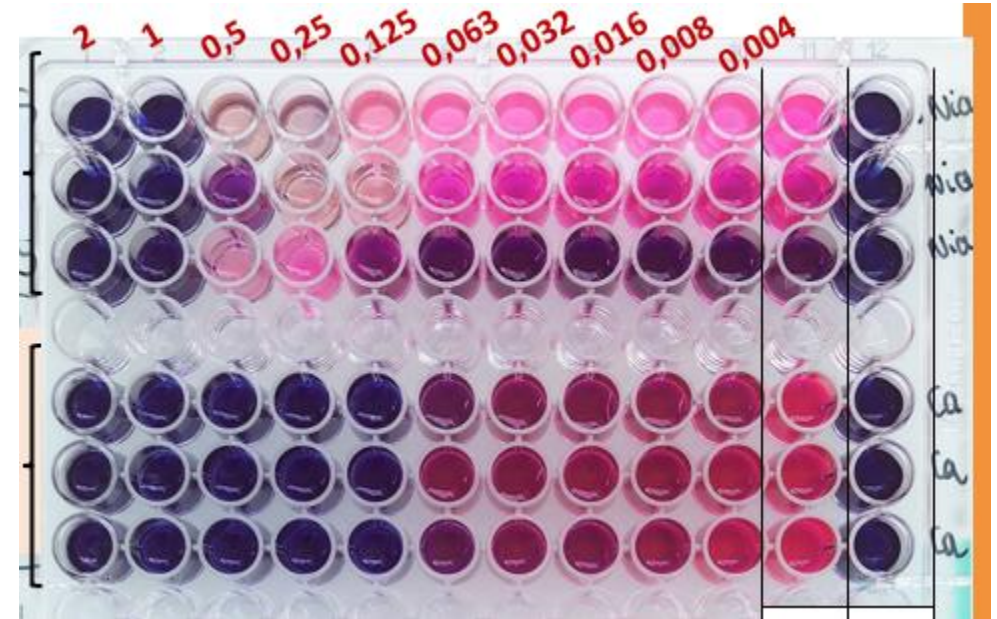


Characterize the *in vitro* antimicrobial effects (antibacterial, antiviral) of EOs

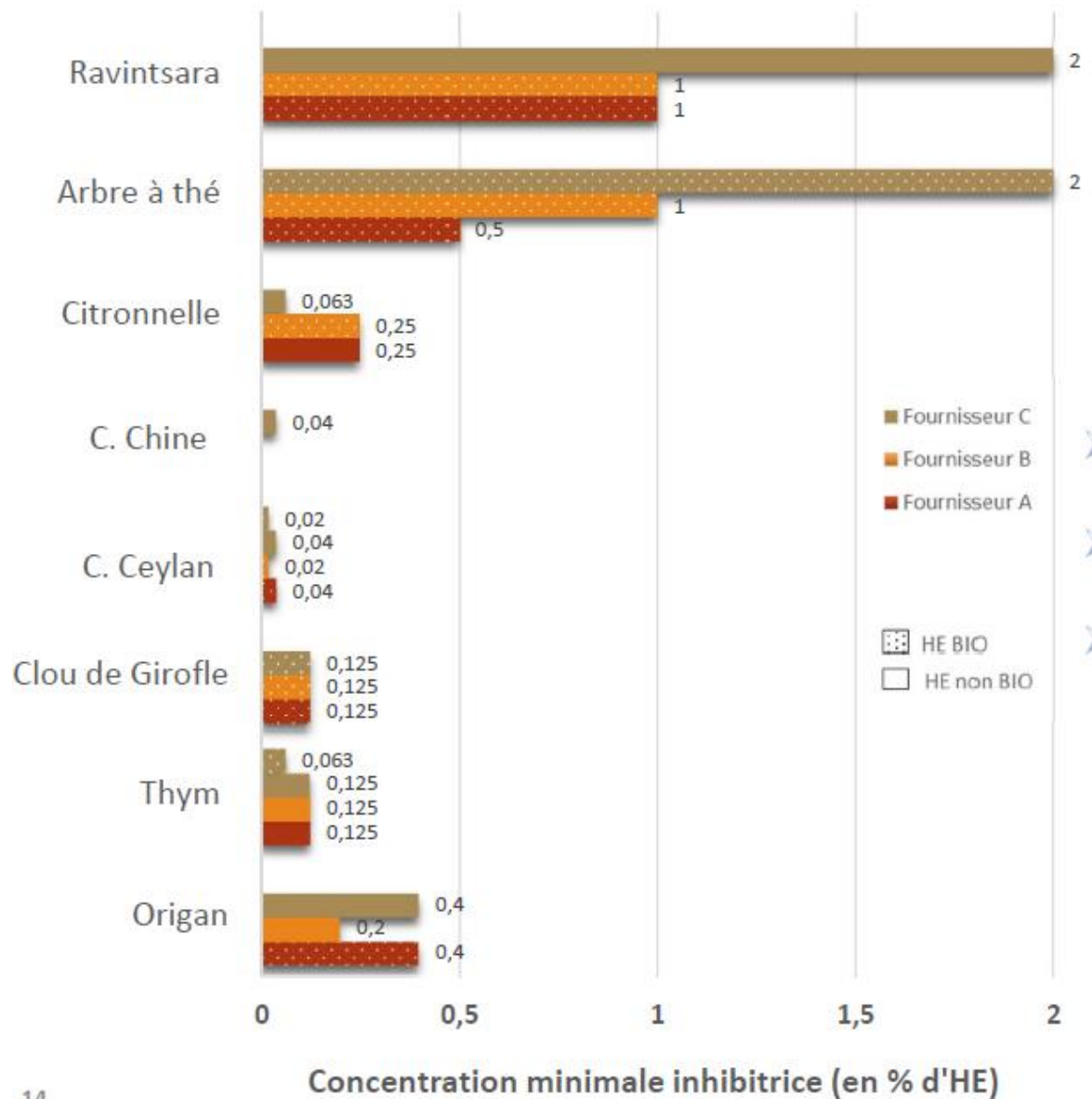


# Aromat-Eq Project

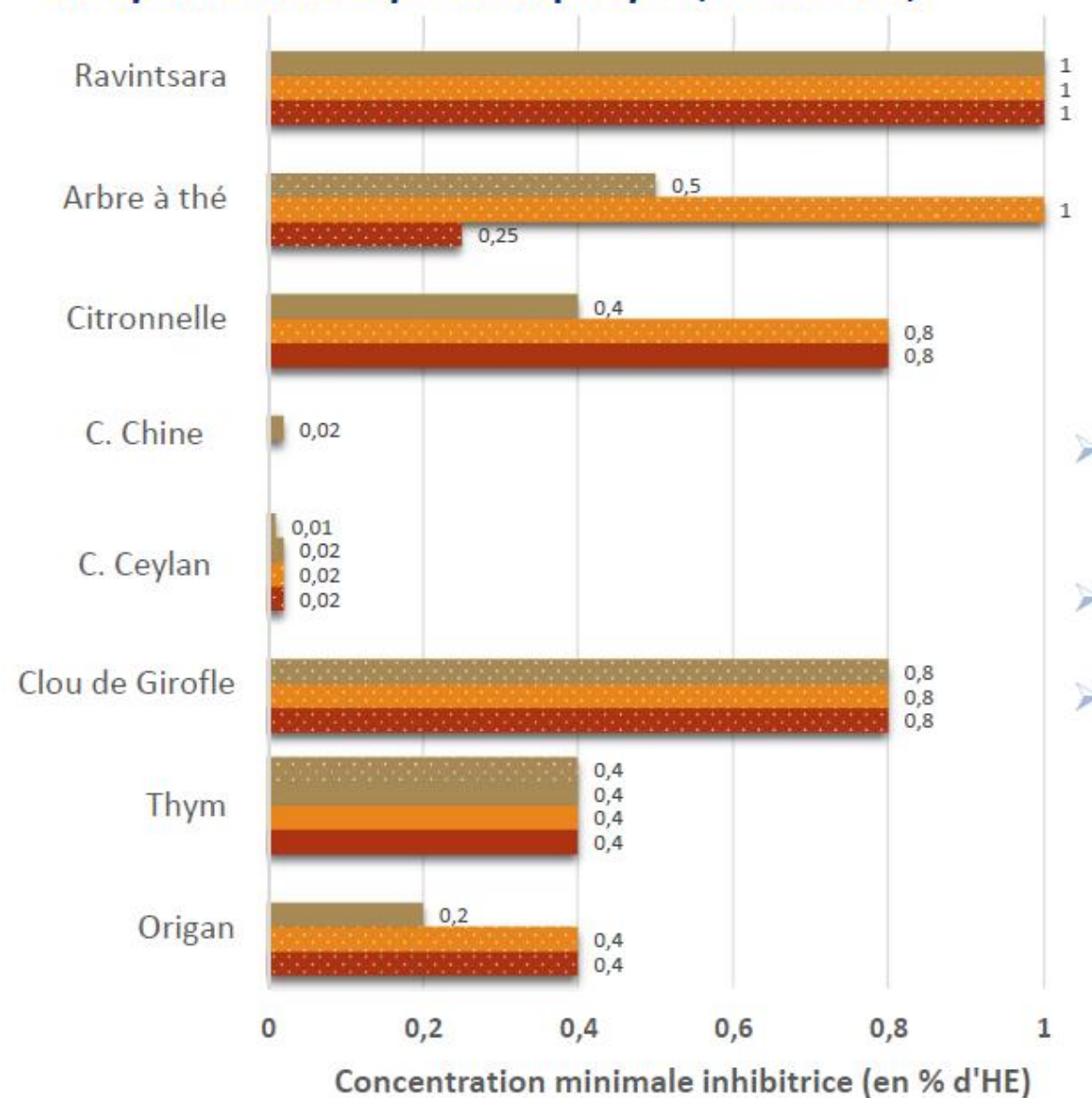
- Respiratory horse pathogens
  - *Streptococcus equi* subsp *equi* et *zooepidemicus*,
  - *Pseudomonas aeruginosa*
  - *Staphylococcus aureus*
- Virus : herpes virus 1 et 4.



## *Streptococcus equi* subsp *zooepidemicus* (CIP 103.22)



## *Streptococcus equi* subsp *equi* (CIP 102.910)





# Projet Aromat\_Eq 2



Crédit photos : J Dauvillier  
M. Depecker

# ORIGUR Project -2025

## Oregano EO for treating urinary tract infections in dogs



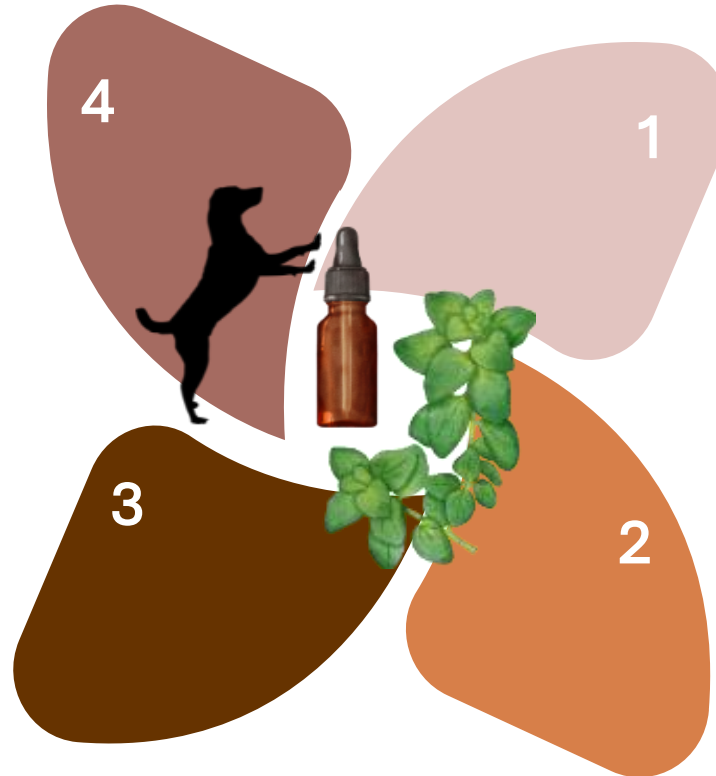
ENV Toulouse  
Dre N. SCHMITT



100 k€

Safety evaluation of orally administered oregano EO in healthy dogs

Determine the inhibitory capacity of oregano EO on the growth of pathogens often implicated in cystitis in dogs

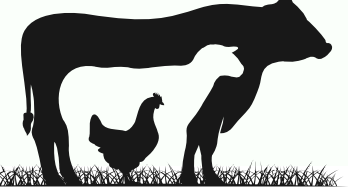


Measure the MIC of carvacrol and thymol for *Proteus mirabilis* and *Escherichia coli* selected strains

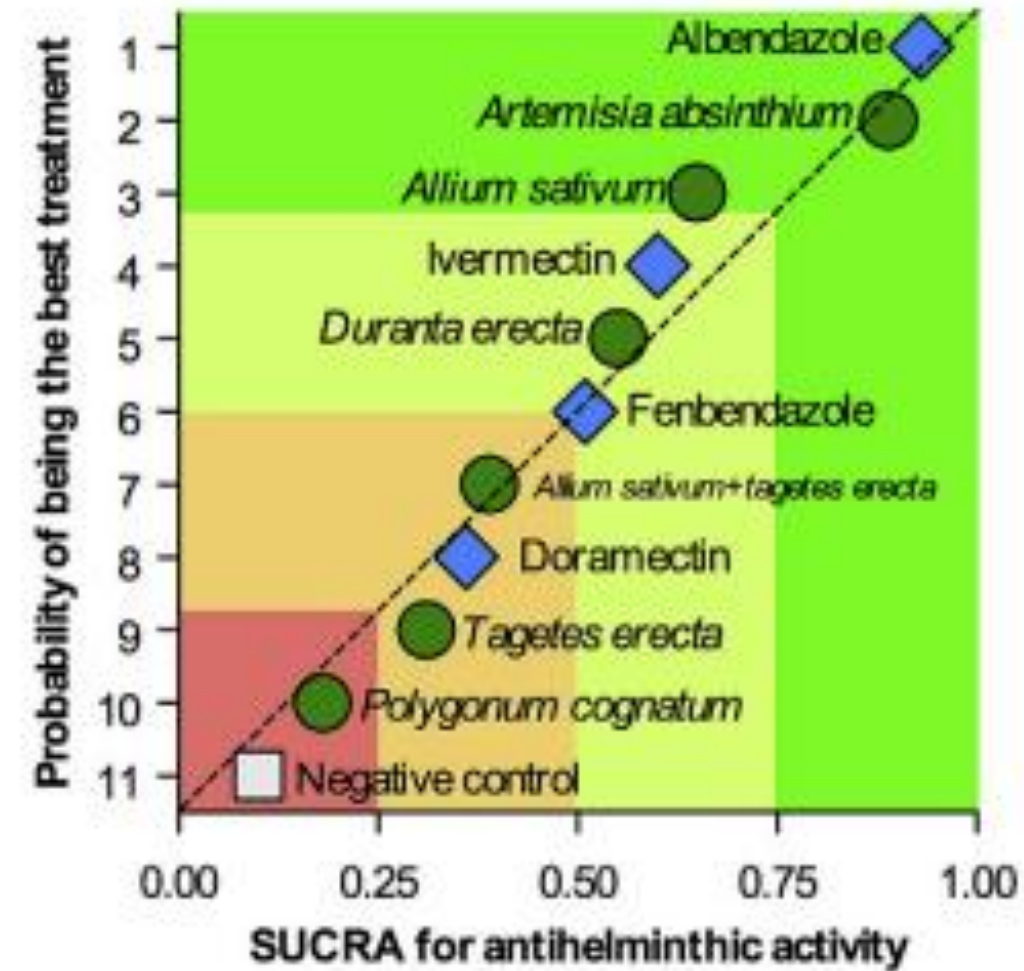
Measure the urinary concentration of carvacrol and thymol after oral administration of oregano EO in healthy dogs.



# The Future ?



## Anti-parasitic Plants



Calzetta, L., et al. (2020).

*Artemisia absinthium* et *Allium sativum*  
plus efficace que le fenbendazole et  
l'ivermectine

*Duranta erecta* = as efficient as  
ivermectine and fenbendazole.

## Research programs in Louisiana

**"Effects of a Supplement Containing Siberian Ginseng on Health and Behavior in Horses."**

Sponsored by SmartPak, LLC. Private, \$40,000.



Dr Frank Andrews  
and his team

**"Effects of a Supplement Containing CBD on Sedation, Ataxia Scores and Equine Health Parameters."**

Sponsored by SmartPak, LLC. Private, . \$51,000.

**"The Effects of Turmeric and Devils Claw on Equine Gastric Ulcer Score."** Sponsored by SmartPak, LLC. Private, . \$60,000.

**" Effect of an Oral Supplement Containing Curcumin Extract (Longvida) on Lameness due to Osteoarthritis or Degenerative Disease and Gastric Ulcer Scores"** Sponsored by W.F. Young Company, Private, \$161,131.00.

**"Exploring beneficial effects of blueberries in horses: Effect of blueberries on Exercise Testing in horses on the Treadmill,"** Sponsored by Blueberry Growers of America, Private, . \$62,208.00.

# VETERINARY HERBAL MEDICINE

ANIMAL,  
USER AND CONSUMER  
SAFETY

ANIMAL  
WELFARE



VETERINARY DIAGNOSIS

VETERINARY PRESCRIPTION

VETERINARY FOLLOW UP

EUROPEAN COLLABORATION  
REGULATIONS

# The future of herbal veterinary medicine



Residue risk  
assessment ?



Human and veterinary  
medicine collaboration

Definition of standardized  
herbal products



Adapted and  
pragmatic legislation



European collaboration  
and **public research  
funding**  
**New regulations ?**



Funded by  
the European Union

