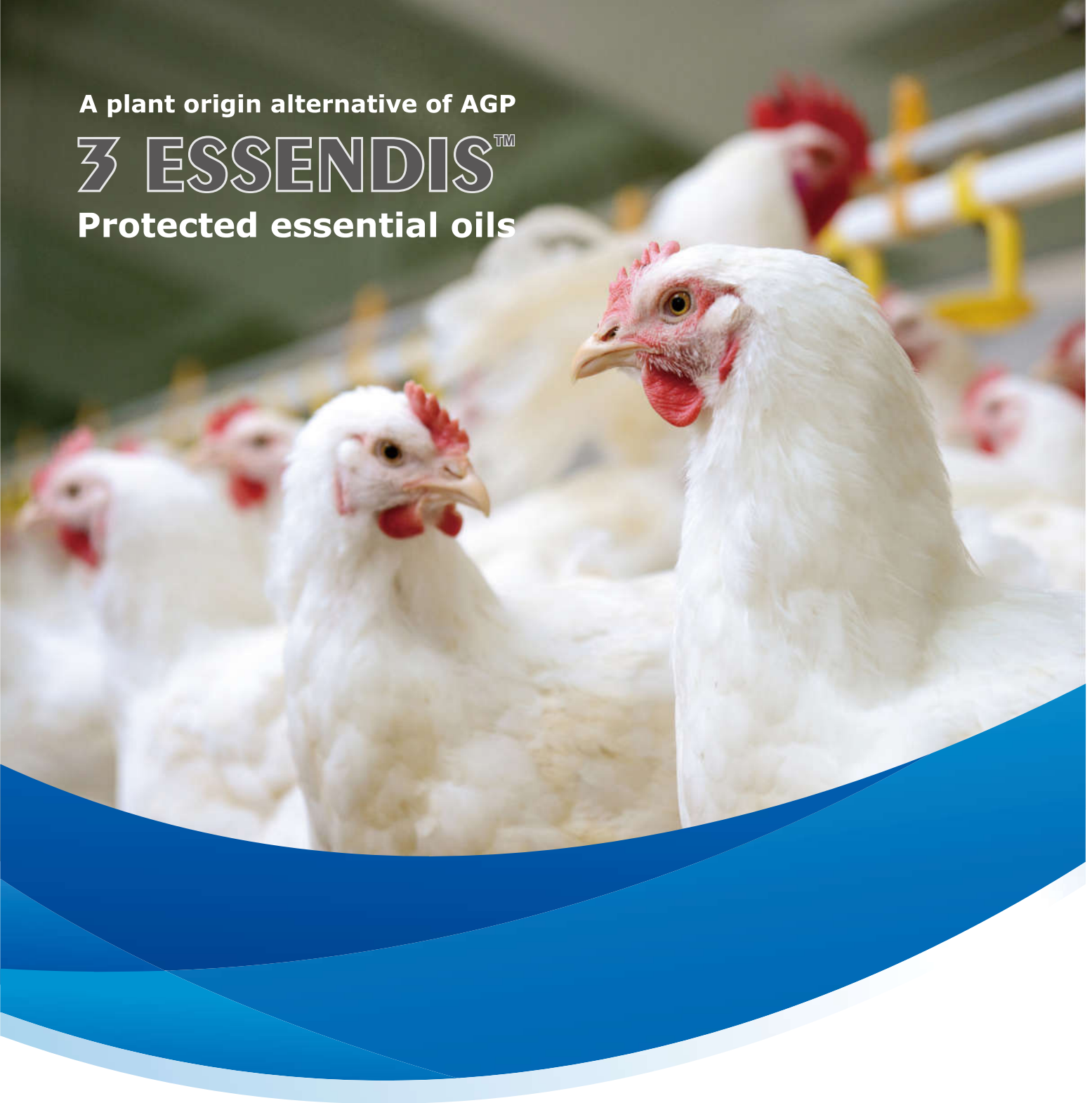


A plant origin alternative of AGP

**3 ESSENDIS™**

Protected essential oils



**A natural choice for**

- Gut health
- Enhanced growth
- Improved poultry products



Hangzhou De Mark Industrial Co Ltd

# Introduction

The ban of antibiotics as growth promoters in animal feed in many countries and the demand for natural alternatives have increased interest in essential oils in recent years.

3 Essendis is a plant essential oil compound product specially developed for animal use by screening various plant essential oils and produced by applying state-of-art technology. It has triple functions of antibacterial, anti-inflammatory and growth promotion.

## Active Ingredients and Guaranteed value

### 3 Essendis Premix:

Thymol  $\geq 7.5\%$

Cinnamaldehyde  $\geq 5.0\%$

Carvacrol  $\geq 2.5\%$

### 3 Essendis Oral solution:

Thymol  $\geq 5.0\%$

Cinnamaldehyde  $\geq 5.0\%$

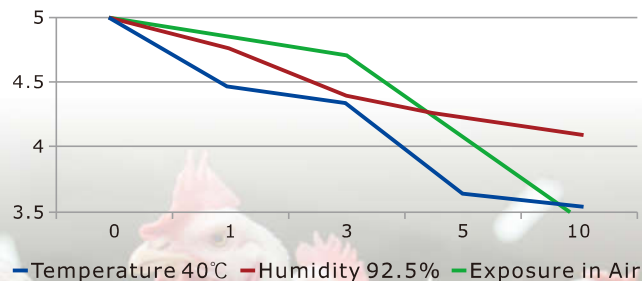


# High Stability

The unique molecular-embedded sustained-release structure of 3 Essendis guarantee its continuously releases of essential oil molecules in the intestine, maintaining sufficient inhibitory concentration for optimal function. Being protected from heat and moisture, 3 Essendis can minimize the volatilization of the active ingredients in expansion and pelletization process.

Stability test results of 3 Essendis under high temperature, humidity and exposure in the air

Cinnamaldehyde content (%)



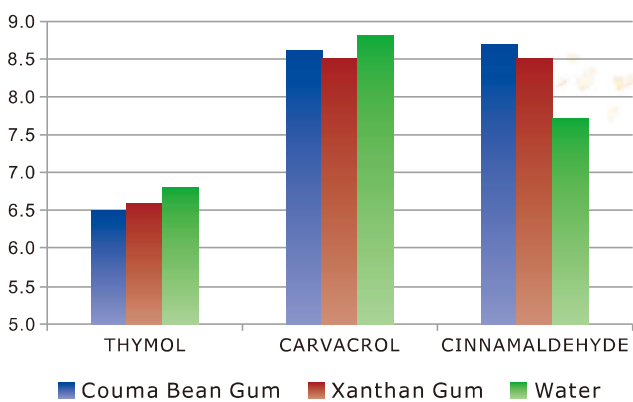
# Function and Benefits

- 3 Essendis is effective in prevention poultry from diarrhea.
- 3 Essendis has synergistic effects with enzyme, organic acids, chelated amino acid, and commonly used antibiotics.
- 3 Essendis improves the daily weight gain and feed conversion rate, and 3 Essendis improves production capacity and animal product quality.



## 3 Essendis has anti-Salmonella activity

log CFU per ml



Resistance against Salmonella in the presence of feed.

The final concentration of 3 Essendis is 0.1% (1g/L), and the ratio of feed to essential oil is 2:1.

(W.Si et al., J of Appl Microbiol.2006)

## 3 Essendis has strong inhibitory effect on Listeria, Salmonella and Escherichia coli

MIC of 3 Essendis against Listeria, Salmonella and Escherichia coli

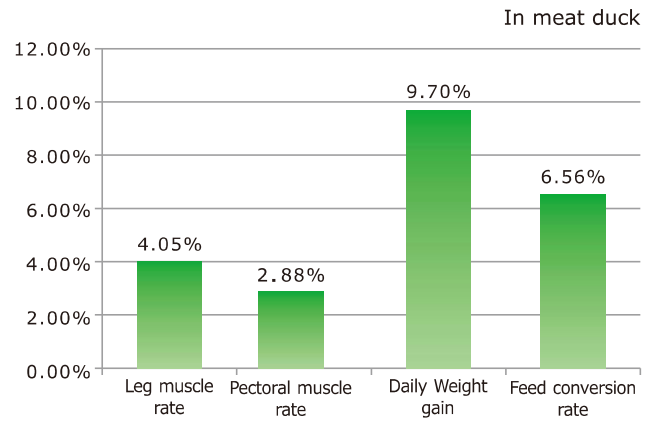
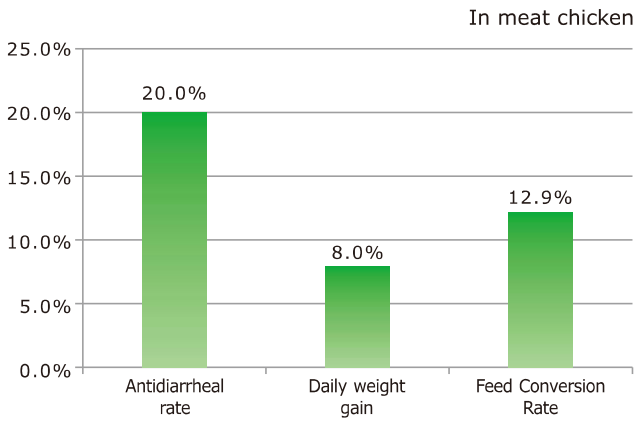
Essential oils MIC/MBC(uL/mL)	Tested bacteria		
	Listeria	Salmonella	Escherichia coli
	NCTC11994	S0584	0157:H7 S0575
Thymol	0.25-0.50	0.313-0.375	0.25-0.313
Carvacrol	0.125-0.25	0.188-0.25	0.25-0.375
Cinnamaldehyde	0.125-0.5	0.125-0.25	0.125-0.25

(H.Mith et al., FoodSciNutr.2014)

## 3 Essendis has strong inhibitory effect on Escherichia coli, Micrococcus luteus and Bacillus subtilis

Essential oil vs.Antibiotics	Inhibition zone (mm) of tested bacteria		
	Escherichia coli	Micrococcus luteus	Bacillus subtilis
Control	12.2	12.6	8.2
3 Essendis	14.4	15.6	11.1
Ampicillin(100ug/ml)	8.1	26.0	8.1
Colistin Sulfate(100ug/ml)	14.2	10.3	8.1

Growth Promotion Effect of 3 Essendis



## Recommended Dosage

For infection prevention:

	Addition of 3 Essendis premix in complete feed (unit: g/t):	Addition of 3 Essendis oral solution in drinking water (unit: g/m3):
Broilers	200-300	100-150
Layers	200-300	100-150

For treatment of infectious disease:

Double dosage, or subject to your veterinarian or practitioner’s advice.

## Packing and Storage

**Packing:** 20kg in cartons / bags, or subject to customer’s private option.

**Storage:** stored in a ventilated and dry environment, avoid direct sunshine.

Use up after the product package is opened.

**HANGZHOU DE MARK INDUSTRIAL CO LTD**

Room 4D105, Building 16, No.588 Wangmei Road, Yuhang District, Hangzhou, Zhejiang, China

Phone: +86 571-88665080

Fax: +86 571-56389080

Email: jzfong@de-mark.com sales@de-mark.com

Website: www.de-mark.com