

# CRINA<sup>®</sup> Poultry

The natural choice for improved profitability

a **DSM** Product



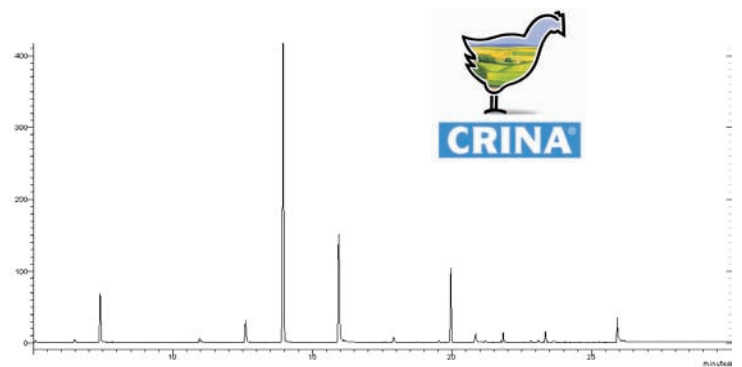
# What is CRINA® Poultry?

CRINA® Poultry is a unique blend of natural and nature-identical essential oil compounds carefully selected following a comprehensive in-vivo and in-vitro research programme. The selected compounds, with synergistic activities are formulated into a dry powder to produce CRINA® Poultry, which can be easily added to feeds.

Essential oils have been used by man for centuries as fragrances, flavours and for their antimicrobial properties. More recently, it has been discovered that specific compounds have a valuable role in supporting the health and performance of livestock species.

Within the bird's gastrointestinal tract, CRINA® Poultry enhances endogenous enzyme secretion and beneficially regulates the gut microflora. Feeding trials show it can improve feed conversion, growth and profitability.

## A specific and standardised blend of essential oil compounds



**Stimulation  
of  
digestive  
enzymes**



**Regulation  
of gut  
microbial  
flora**

# Intestinal optimisation

Modern poultry breeds are selected for their genetic growth potential and superior feed conversion efficiency. Whilst the development and establishment of the gastrointestinal microflora commences immediately after hatching, optimum digestive function is achieved only after 7-10 days. CRINA® Poultry can assist birds to reach their performance potential through stimulation of endogenous enzyme secretion and stabilisation of the intestinal microflora.

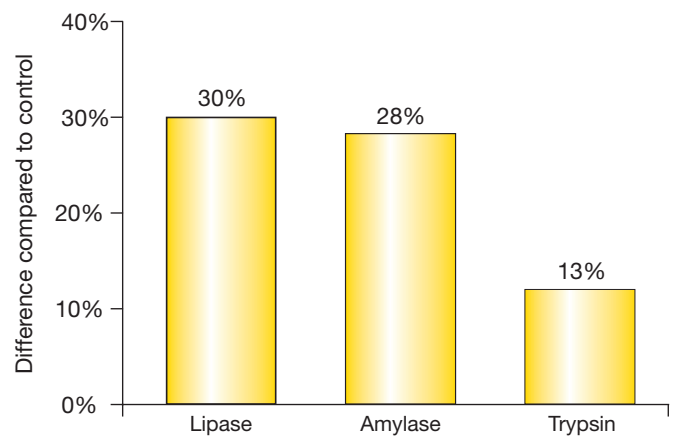
## Digestibility enhancement

- Stimulates production of endogenous enzymes
- Improves feed digestibility

## Regulation of microbial flora

- Reduces substrates available for fermentation
- Modulates the gut environment

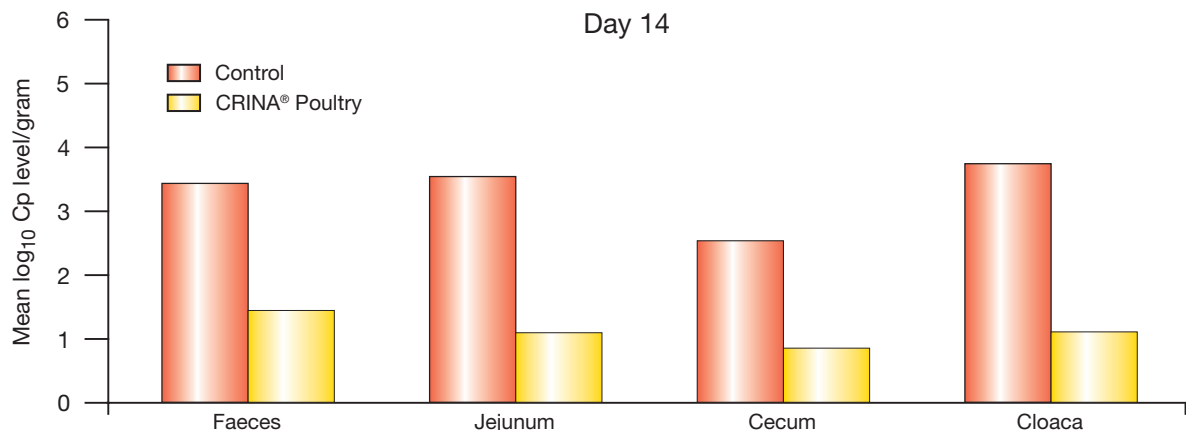
## Effect of CRINA® Poultry on the activities of intestinal enzymes of broiler chickens at 21 days



Lee et al., (2003)

The compounds included in CRINA® Poultry (100 PPM) have been demonstrated to enhance the pancreatic enzyme production and activity.

## Modulating effect of CRINA® Poultry on *Cl. perfringens*



Mitsch et al. (2004)

Under commercial conditions over an 18-month period, the supplementation of CRINA® Poultry (100 mg/ kg) has been demonstrated to reduce the level of *Cl. perfringens* in the digestive tract.

# Trial Results

## Increased profitability

- Improved feed conversion
- Improved weight gain
- Contributes to the poultry health and welfare

### Effect of CRINA® Poultry on broiler performances

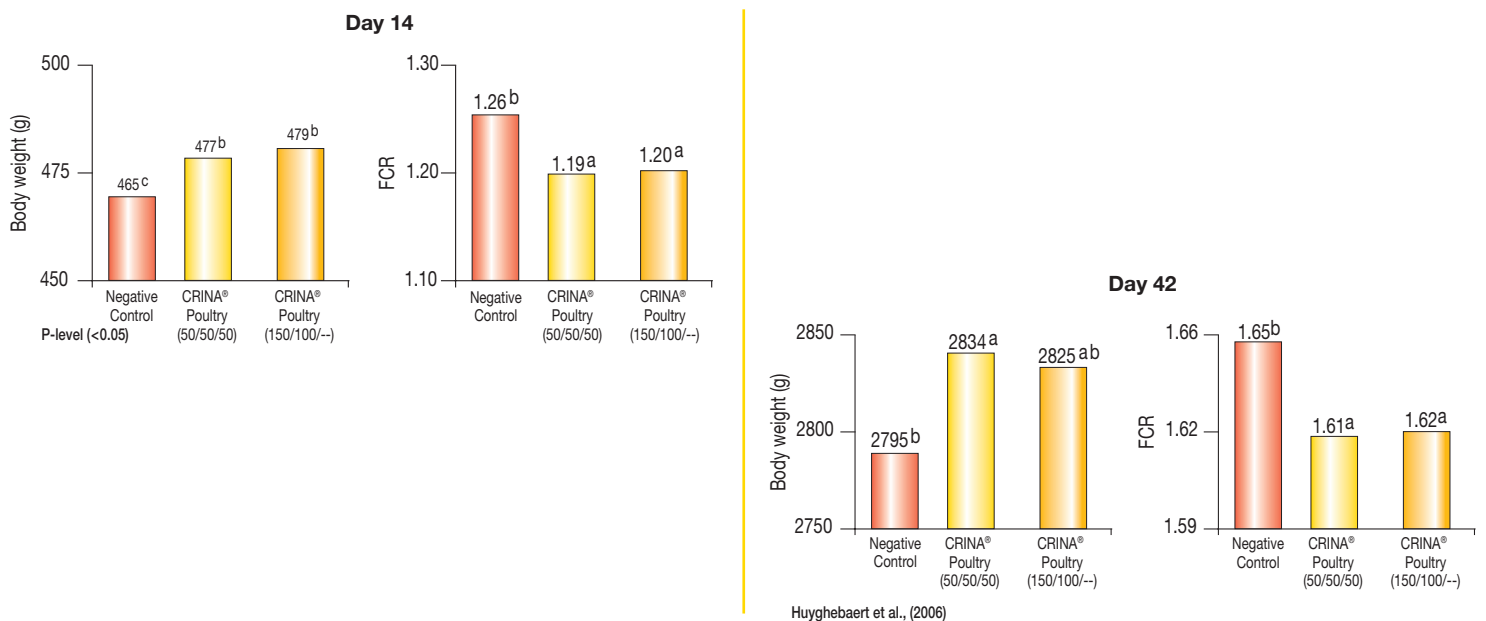
	Body weight (gram)		FCR	
	Positive Control	CRINA® Poultry (100mg/kg)	Positive Control	CRINA® Poultry (100mg/kg)
<b>21 days</b>	774	806	1.48 <sup>a</sup>	1.42 <sup>b</sup>
<b>42 days</b>	2492	2484	1.83	1.84

\* p < 0.001

Barragan et al., (2004)

CRINA® Poultry has been demonstrated to significantly improve feed conversion in the starting phase. This results in an optimal start, the key to a successful and profitable grow-out.

### Effect of CRINA® Poultry on broiler performances



CRINA® Poultry level should be adapted in the (starter/grower/finisher) feed for an optimal balance between its stimulating and modulating effect.

# CRINA® Poultry

## Economics

Results from a series of research and commercial studies in Europe show that CRINA® Poultry improves liveweight gain and feed conversion by about 1.5% and 2.5% respectively. This gives a return on investment of 5.1.

## Recommendations

	Starter	Grower to slaughter
Broiler	100 – 150 mg/kg	50 – 100 mg/kg
Turkeys	100 – 150 mg/kg	50 – 100 mg/kg
Layers	50 – 100 mg/kg	

Supplementation levels should be adapted according to local conditions.



## Why DSM Nutritional Products?

DSM Nutritional Products is the world's leading supplier of vitamins, carotenoids, enzymes and eubiotics to the Animal Nutrition & Health Industry. The company has a comprehensive range of value-added, branded product forms, enabling efficient feed and food production which it supplies worldwide via a unique and extensive network of dedicated premix facilities. DSM Nutritional Products, headquartered in Switzerland, has implemented quality systems around the world to ensure safety and traceability of products to the final consumer. These systems are validated by third party certification bodies to comply with standards such as FAMI QS, ISO and HACCP. DSM Nutritional Products adds value to the food chain through the provision of innovative solutions based on safety, traceability and quality, benefiting our customers, the consumer, the environment and animal welfare.



## Why CRINA®?

In 1980, CRINA®, then a private research centre for animal nutrition, recognised the significant role that essential oils could play as digestive stimulants in livestock production. Following extensive research, a range of precisely formulated and consistent blends of essential oil compounds, marketed under the CRINA® trademark, was developed. CRINA® Poultry, CRINA® Piglets, CRINA® Finishing Pigs and Sows stimulate superior feed digestibility and regulate gut microflora. CRINA® Ruminants reduces the rate of protein and starch breakdown in the rumen, as well as ruminal deamination and therefore increases rumen by-pass. All compounds used in CRINA® products are approved for feed and food and appear on the FEMA (Flavour and Extracts Manufacturers Association) and/or GRAS (Generally Recognised as Safe) listings.



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