



**ORFFA**

## Excential Beta-Key replaces Choline chloride in your feed

Feed materials like soybean meal, corn and wheat contain already rather high amounts of choline. Still, additional choline in the form of Choline chloride in animal feed has shown to improve performance. Of an animal's total requirement for choline it is estimated 50% is needed for the maintenance of the structural integrity of cell membranes (as phosphatidylcholine) and for neurotransmission (as acetylcholine). The other 50% is used as a source of methyl groups. To function as a methyl group donor, choline will first always be converted into betaine. A conversion containing two steps and taking place inside the mitochondria of the liver cells.

**By adding Excential Beta-Key instead of Choline chloride to the feed, you bypass the need for this conversion and increase efficiency.** As a direct source of betaine, Excential Beta-Key can be considered as the most efficient methyl donor. Meanwhile, in all common feed formulations, the choline present in the raw materials will satisfy the animal's requirement for phosphatidylcholine and acetylcholine synthesis.

### Improved efficiency

When instead of choline chloride as methyl donor, equimolar concentrations of Excential Beta-Key (providing the same amount of betaine molecules) are provided in the feed, a better performance can be observed thanks to the better bioefficacy. For broilers this better efficacy was estimated based on multiple scientific publications and practical experiences to be 55%. Thus, for broilers, the equimolar dosages can be reduced to 55%, with maintained performance.

### PRACTICAL EXAMPLE IN BROILERS:

**1000** g/ton

Choline chloride 60% can be totally replaced by:

**700** g/ton

Excential Beta-Key  
(equimolair dosage)

OR

**385** g/ton

Excential Beta-Key  
(55% bioefficacy)

Engineering your feed solutions

www.orffa.com - Follow us on 



**ORFFA**

## VALIDATION IN THE FIELD

Betaine is a very efficient methyl donor, and above total replacement of Choline chloride with better bioefficacy, also a small part of the methionine in broiler diets can be replaced. Very easily, a part of the added DL-methionine can be exchanged on a one-to-one level for Excential Beta-Key.

	Control	XC Beta-Key
Mortality (%)	6.0	3.7
Daily gain (g)	44.54	46.92
FCR (1500)*	1.69	1.61
Production index	243	258

During a practical trial in Tunisia, broiler feed was supplemented with 365 ppm Excential Beta-Key. This amount was calculated based on the sum of 100 ppm Excential Beta-Key as substitute for 100 ppm DL-methionine and 265 ppm of Excential Beta-Key for the replacement of Choline chloride 60%. As advised by Orffa, this 265 ppm of Excential Beta-Key can replace the 684 ppm Choline chloride 60% from Control with an equal bioefficacy (see calculator). Results of this field trial, as shown in the table, indicate this replacement has definitely no negative effects on the performance of the animals.



### USE THE ORFFA CALCULATOR

To easily calculate how your current used Choline chloride product can be exchanged by Excential Beta-Key, Orffa developed a calculator. Both the equimolar replacement level and the level with equivalent bioefficacy are presented. As an example the calculation sheet for the practical trial mentioned above, is presented. Orffa's calculator provides clear insight in required replacements for choline and possible sparing of methionine, to support interested customers and evaluate price effects.

ORFFA REPLACEMENT OF CHOLINE	
1) Choose product from list	
Choline chloride 60%	
2) Fill in used concentration (you can choose a unit from the list)	
684	ppm
Corresponding currently used nutrient contents (on equimolar level):	
684 ppm	Choline Chloride 60%
344 ppm	Betaine
452 ppm	Betaine HCl
356 ppm	Choline (hydroxy-analogue)
410 ppm	Choline chloride
306 ppm	Choline
<b>REPLACEMENT</b>	
Excential Beta-Key concentration at equimolar level:	
=	684 ppm Choline Chloride 60%
	477 ppm Excential Beta-Key
<b>REPLACEMENT - ORFFA ADVICE:</b>	
Excential Beta-Key concentration with equal bioefficacy*:	
can be replaced by	684 ppm Choline Chloride 60%
	265 ppm Excential Beta-Key
* Based on a 55% bioefficacy level of choline compared to betaine	



## BENEFITS OF ADDING EXCENTIAL BETA-KEY INSTEAD OF CHOLINE CHLORIDE

- More efficient methyl donor
- Osmoprotective effect (in GIT)
- Low hygroscopicity
- Excellent free flowing characteristics
- Not aggressive towards other nutrients or feed mill equipment

For more information, please visit our website or contact your Orffa specialist.

[www.orffa.com](http://www.orffa.com)

Engineering your feed solutions

[www.orffa.com](http://www.orffa.com) - Follow us on

