

Comparative Pelleting Stability of Aureomycin[®] and Oxytetracycline

Abstract

Aureomycin (chlortetracycline) premix has shown improved stability compared to oxytetracycline in pelleted feed. This is due to the distinct differences between these two compounds in molecular structure, and physical and chemical properties.

Post-pelleting retention of Aureomycin from the mash was greater compared to oxytetracycline in all 10 studies summarized in this Technical Bulletin. Overall, the post-pelleting stability advantage of Aureomycin was shown to be 8.0% over oxytetracycline.

Introduction

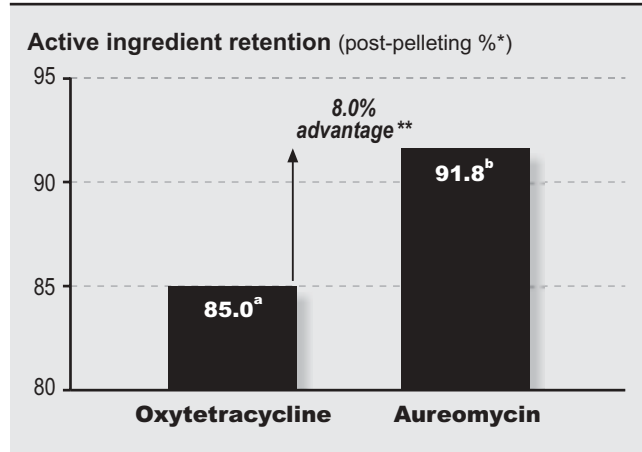
Various antimicrobial feed additives, such as the tetracyclines, can deteriorate when exposed to heat, moisture, pressure and/or other feed ingredients during feed manufacturing and storage. The differences in molecular structure and physical and chemical properties of Aureomycin reduce activity loss during feed manufacturing, including pelleting, and subsequent storage of the feed compared to oxytetracycline.

Post-Pelleting Stability of Aureomycin vs Oxytetracycline

The results of ten studies (the current database), comparing the effects of pelleting on Aureomycin and oxytetracycline, were tabulated, and the pooled averages were statistically analyzed using the paired t-test. In each study, after pelleting, retention of Aureomycin from the mash, as determined by assay, was greater compared to oxytetracycline. Overall, post-pelleting, 8.0% more Aureomycin was shown to be retained from the mash than oxytetracycline (Figure 1 and Table 1).

Improved pelleting stability of Aureomycin demonstrates the advantages of this product over oxytetracycline. It also is one of many reasons why Aureomycin is the widely accepted in-feed tetracycline of choice, providing cost-effective health and performance benefits in livestock and poultry production.

FIGURE 1: Overall pelleting stability of Aureomycin and oxytetracycline; pooled averages of 10 studies.



a,b P = 0.0097

$$* \text{ Retention of active ingredient post-pelleting (\%)} = \frac{\text{Concentration of active ingredient post-pelleting}}{\text{Concentration of active ingredient in mash}} \times 100$$

$$** \text{ Advantage (\%)} = \frac{91.8\% - 85.0\%}{85.0\%} \times 100 = 8.0\%$$

TABLE 1. Pelleting stability of Aureomycin and oxytetracycline; description of 10 individual studies.

Study no.	Retention (%) [*]		Advantage (%) ^{**}	Comments	Reference
	OTC ^a	Aureomycin			
1	81.9	85.4	4.3	300 ppm active ingredient in feed	Report 2687 (1992)
2	83.0	88.7	6.9	300 ppm active ingredient in feed; loss when heated to 194°F (90°C)	Report 2831 (1993)
3	77.3	95.6	24.1	300 ppm active ingredient in feed; 194°F (90°C) for 1 hour	Report 2831 (1993)
4 ^b	94.0	109.0 ^d	16.0	High tallow/acidulated soapstock concentrate; AILNR	Report F147 (abstract) (1963)
5 ^{b,c}	60-75	80-100	33.3	High fat supplement; AILNR	Report B302 (abstract) (1965)
6	78.5	81.9	4.3	300 ppm active ingredient in feed	Report 2704 (1992)
7 ^b	96.5	103.5 ^d	7.3	1466 ppm active ingredient in feed	Study A508 (1996) (unpublished)
8	77.5	81.4	5.0	Pooled data across 7, 10 & 13% moisture and storage temperatures of 73°F (22.8°C) and 99°F (37.2°C); AILNR	Bulletin ANH 4115 (1992)
9	87.3	89.3	2.3	Uncooled pellets; 9% moisture; data from 0 to 4 weeks post-pelleting; AILNR	Bulletin ANH 4115 (1992)
10	89.0	90.7	1.9	Air cooled pellets; 9% moisture; data from 0 to 4 weeks post-pelleting; AILNR	Bulletin ANH 4115 (1992)

^a Oxytetracycline

^b Assayed by microbial method.

^c Data set excluded from statistical analysis because pairs could not be determined from ranges.

^d Value exceeds 100% due to assay variation.

AILNR = active ingredient levels not reported.

$$\text{* Retention of active ingredient post-pelleting (\%)} = \frac{\text{Concentration of active ingredient post-pelleting}}{\text{Concentration of active ingredient in mash}} \times 100$$

$$\text{** Advantage (\%)} = \frac{\text{Retention of Aureomycin (\%)} - \text{Retention of oxytetracycline (\%)}}{\text{Retention of oxytetracycline (\%)}} \times 100$$



Alpharma Inc.
One Executive Drive
Fort Lee, NJ 07024 USA
1-888-897-8657

Aureomycin® is a registered trademark of Alpharma Inc.
Data in Alpharma research file.
Copyright © 2002 Alpharma Inc.

Additional technical information is available at www.alpharma.com