



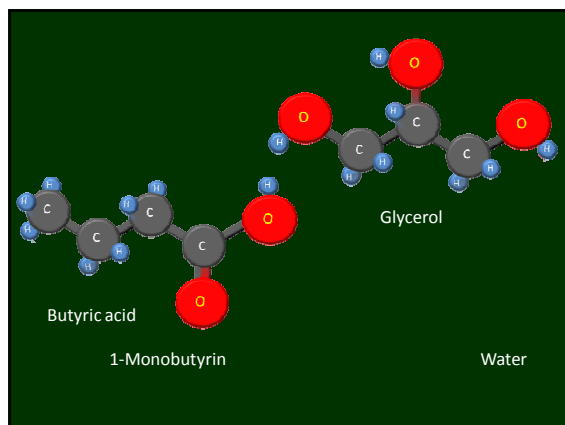
## 1-Mono butyrin in the diet of broilers: performance results in experimental farm

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## Some pieces of information about butyric acid

- It is a natural fermentation product present in the gut environment;
- It is a natural, selective modulator of intestinal micro flora and a natural stimulating factor of intestinal immune system;
- It is an important energy source to the epithelial cells of intestinal mucosa: it enlarges the villi;
- Its ester **Sn 1 monobutylin** is particularly adequate as a feed integrator because its molecular form is chemically "protected", physiologically easily absorbable, odourless, water dispersible.



Entering "butyric acid + villi" on Google some 1870 scientific references referable to the various animal species, human enclosed, are found.

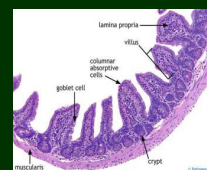
Entering "monobutylin + villi" on Google some 41 references are displayed.

Amongst the scientific papers available, the one on broiler chickens by prof. Halouzka, of the Institute of Pathological Morphology of the University of Brno, is illustrated with amazing micro photos.

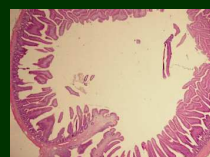
The measurements of the height of villi have been made at three different sites of the alimentary canal of the chickens, treated with 0.2% mono butyrin in the drinking water:

- at the Meckel's diverticle (at the border between jejunum and ileum);
- at the central segment of ileum and
- at the ileo-caecal valve.

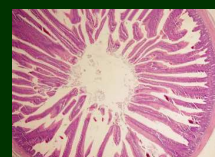
How the villus height is measured



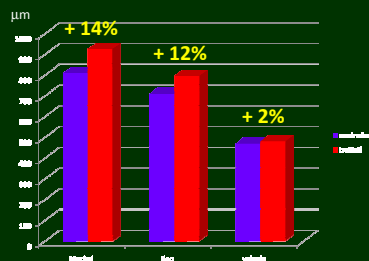
At the Meckel's diverticle



Untreated animal (750  $\mu$ m)



Treated animal (1250  $\mu$ m)



Average effect of mono butyrin on the villi height.

Results of an experimental trial carried out at the experimental farm of the Department of Agricultural Biotechnologies of the University of Florence (Italy).

#### Materials and Methods

- 80 Ross 708 broiler chickens, males
- 4 treatments
- 5 replications (1 box = 1 statistical unit)
- 5 birds per box (20 birds per treatment)
- 7 weeks of trial

#### Feeding: commercial mixed feeds

- starter (0-14 d) = 24.50 crude protein, 6.20 fat;
- grower (15-42 d) = 21.10 crude protein, 8.75 fat.

#### Protocol of the trial

- control group: starter (0-14 d); grower (15-42 d)
- group T1: MB 0.4% in the starter feed for 14 d
- group T2: MB 0.8% for 7 d + MB 0.4% for another 7 d
- group T3: MB 1.6% for 7 d + MB 0.8% for another 7 d.

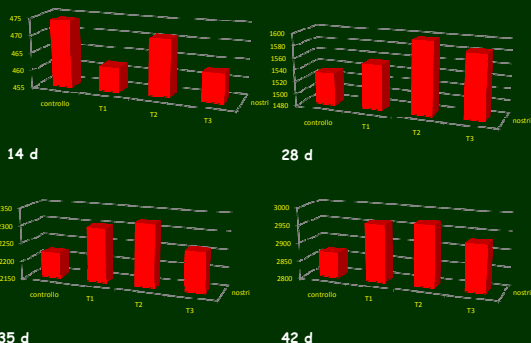
#### Weekly measurements

- body weights (weight gains)
- feed to gain ratios.

Body weight, g				
	control	T1	T2	T3
7 d	164	164	165	163
14 d	474	462	471	463
21 d	925 a	950 b	989 c	958 b
28 d	1.532 a	1.554	1.598 b	1.584
35 d	2.220 Aa	2.301 b	2.322 B	2.280 b
42 d	2.870 Aa	2.970 B	2.960 B	2.930 b

Body weight with reference to the control group, %				
	control	T1	T2	T3
7 d	100	100	101	99
14 d	100	97	99	98
21 d	100	103	107	104
28 d	100	101	104	103
35 d	100	104	105	103
42 d	100	103	103	102

#### Variations of live weights



Weekly feed/gain ratios				
	control	T1	T2	T3
7 d	1.34	1.40	1.29	1.41
14 d	1.43	1.40	1.39	1.41
21 d	1.49	1.47	1.45	1.48
28 d	1.62	1.60	1.58	1.61
35 d	1.82	1.79	1.78	1.76
42 d	2.10	2.09	2.09	2.10

Average total feed/gain ratios at 35 and 45 d				
	control	T1	T2	T3
35 d	1.58	1.56	1.54	1.56
42 d	1.70	1.68	1.66	1.68

### Conclusions

- The product **Monobutylin Hydro C4 30** resulted palatable even at the highest concentrations;
- Already at 35 d the birds of all the treated groups were on average heavier than those of the control group (3-5%);
- And the trend of feed/gain ratios of the birds of group T2 was better than that of the control ones;
- amongst the tested treatments, T2 (0.8%+0.4%) resulted the best, both in terms of weight gains and of feed/gain ratios;
- Hence, it appears evident that overtaking the level of 0.8% mono butylin in the starter feed is not convenient in any case.

