

CURRENT SITUATION OF β -AGONISTS USE IN SWINE FEED AND ITS RESIDUE IN PORK

Overview of food poisoning in the recent years

Food safety has become a potent issue in Vietnam recently after several cases of food poisoning recorded at public kitchens, industrial zones. There are several causes making pig and chicken meat become less safety for consumers. Some generate acute poisoning when becoming rancidity with the presence of toxicity producing bacteria, while some others do not make acute poisoning but accumulating in the body and becoming potential risk of metabolism disorder, drug resistance and carcinogenesis. This group includes animal originated food such as meat, egg, fish, prawn containing residues of hormone, antibiotics, mycotoxins or heavy metals.

What is β -AGONISTS? mode of action, harmful effect?

In general, using hormone will stimulates and enhances metabolism, improves feed efficiency and weight gain and brings about higher economic efficiency but remains as residue in animal products. Several scientific papers proved that residues of these growth hormone in meat and meat products are the cause generating unusual changes in the growth of the body, vegetative nervous system, gene modification, carcinogenesis and stimulating the development of tumors. From the above scientific evidences, European Commitment has banned the above hormone as growth promoters since 24th of May, 2000.

β -agonists is a group of natural compounds originating from Catecholamines (adrenaline, noradrenaline and dopamine). β -agonists are proved being efficient metabolites, reducing body fat, enhancing muscle growth in mammal (Ricks *et al.*,



Hormone in animal feed, a major concern of leaders

1984), poultry (Dalrymple *et al.*, 1984), swine (Jones *et al.*, 1985) and sheep (Baker *et al.*, 1984; Beermann *et al.*, 1987). To achieve the above effect, β -agonists was used at the level of 5-10 times higher than therapeutic dose (Miller *et al.*, 1988). It is important notice that only a small amount of Clenbuterol is excreted and metabolized, most of Clenbuterol intake remains in muscle and organs of the body (liver, kidney...). When using food processed from these animal, the body shows symptoms similar to spraying Clenbuterol into asthma patient as *increasing heart beat, causing coronary arteriectasia, bronchoectasia and uteroectasia* and at the same time *stimulating insulin release* as well as *glucolysis*.

Current use of β -agonists in animal feed

A total of 428 feed samples were collected during 20/6/2006 to 1/11/2006 period from Department of Animal Production (MARD) and 12 provinces (Hochiminh city, Binh Duong, Binh Phuoc, Kien Giang, An Giang, Tien Giang, Dac Nong, Dong Thap, Binh Thuan, Ben Tre, Bac Lieu, Khanh Hoa) and

from animal feed processing companies in the South of Vietnam. Most of the samples were complete feed (66.4%), the rest were concentrated feed (9.8%), feed ingredients (11.9%), feed additives (5.4%) and others (6.5%).

Method for analysis

Qualitative analysis: minimum detection limit for Salbutamol is 1ppb and Clenbuterol is 2ppb. All samples were undergone qualitative analysis. Negative samples were analyzed once. Positive samples were analyzed three times, then undergone quantitative analysis.

Quantitative analysis: using Elisa method, minimum detection level: 0.05 ppb for both Salbutamol và Clenbuterol.

Result of analyzing β -Agonists in animal feed

From the analysis results of 428 feed samples, we have following comments:

- Proportion of feed samples detected β -Agonist was 11% with a quite high average Clenbuterol level (124.82 ppb), maximum level reached 319.49 ppb. Up to 34.5% of positive samples had Clenbuterol level over 235 ppb. Salbutamol level in the samples was much lower than that of Clenbuterol, with an average of 57.71ppb, ranging from 21.90 to 87.51ppb.
- After the inspection and control strategy of Government authority have been applied, the Clenbuterol level in feed samples reduced by 10 times. However, the proportion of detected β -Agonist samples raised from 9.5% to 16.5 %. The reason can be explained that at this stage the feed mills did not intently use β -Agonist in feed but they could not control the feed additives inputs (premix vitamin-mineral, growth enhancers, enzymes, Choline chloride,...), which are bought from others companies containing Clenbuterol.

- Average Salbutamol level in positive samples was similar in both stages (about 55-60 ppb).

Other research results

When detecting β -Agonist in feeds at a pig farm, we sampled urine and blood of 9 growing pigs (50 kg) and detected that all samples contained Clenbuterol and Salbutamol with the average level in urine and blood were 27-35 ppb and 7-8 ppb, respectively.



Seminar on the risk of β -Agonist use in feed

In the late August of 2006, we conducted another study to take 86 blood samples at a big abattoir in Hochiminh city (pigs originated from Southeast region and Mekong delta) and there were 17 samples detected β -Agonist (19.77%) with the average level of Salbutamol of 7.06ppb, which was 35 times higher than Codex standard on **Clenbuterol** level in beef and horse meat (0.2ppb), ranging from 13 to 43 times (2.61 – 8.71ppb). It is notice that there is a close direct proportion between β -Agonist level in blood of pig before slaughter and residue β -Agonist level in meat. It means that there is β -Agonist residue in meat if it presence in blood. This result (average Salbutamol level of 7.06 ppb) was similar to that of our study in July (7.3ppb – blood samples were collected from growing pigs). It proved that β -Agonist was used for pigs in both growing and finishing stages. Benefit of pig producers is seen clearly when using β -Agonist in feed (faster growth rate of pigs, wider rump and shoulder resulted in good looking pigs for meat, higher lean meat rate, darker meat pigment and higher price: 1000-1500 dong extra per kg live weight).

Measures for preventing β -Agonist use in animal feed

To control the use of hormone in animal feed, we honestly recommend the following measures:

- *Sanctioning approach*: at the moment, sanctioning approach is not strong enough to deter and prevent the use of β -Agonist in feed. It is to suggest that the authority should enforce heavy penalties (huge money, informing in public communication, demolishing detected products, closing mills and/or farms).

- *Inspection*: testing β -Agonist should be conducted simultaneously of 4 stages of pork production (feed production, pig farm, slaughterhouse and distribution). Samples can be taken for analysis including: feed, urine, blood and meat.

Impact of the project

- Four conferences and a campaign of “Say no to growth hormone in animal feed and pig production” have been done with the target of animal feed processing companies and large-scale pig production farms. Conferences received the most concern and support of delegates.

- Vietnam television (VTV) broadcasted the content of the conference in news on 8 and 9 December. Most of the common newspapers in Vietnam such as Vietnamese Communist Party, Saigon Giai Phong, Thanh Nien, Tuoi Tre, Tien Phong released news and do propaganda about this campaign. The efficiency of the propaganda is quite good resulted in declining the use of β -Agonist in animal production.

- Based on the report of IAS, the Ministry of Agriculture and Rural Development announced the name of 8 feedmills who committed the law and issued necessary action to against illegal growth promoters.