

## Growth Hormone Additives in Foods (激素添加劑)

### ● About Growth Hormone Additives

Since the 1950s, the Food and Drug Administration (FDA) has approved a number of steroid hormone drugs for use in beef cattle and sheep, including *natural estrogen* (天然雌激素), *progesterone* (黃體激素), *testosterone* (睾酮), and their synthetic versions. These drugs increase the animals' growth rate and the efficiency by which they convert the feed they eat into meat.

These steroid hormone drugs are typically formulated as pellets or "implants" that are placed under the skin on the back side of the animal's ear. The implants dissolve slowly under the skin and do not require removal. The ears of the treated animals are discarded at slaughter and are not used for human food. Using scientific data, FDA establishes the acceptable safe limits for hormones in meat. A safe level for human consumption is a level of drug in the meat that would be expected to have no harmful effect in humans based on extensive scientific study and review.



### ● Steroid Hormone (growth hormones) Mechanism of Action

1. Steroid hormones pass through the cell membrane of the target cell.
2. The steroid hormone binds with a specific receptor in the cytoplasm.
3. The *receptor bound steroid hormone* (類固醇激素) travels into the nucleus and binds to another specific receptor on the chromatin.
4. The steroid hormone-receptor complex cells for the production of messenger RNA (mRNA) molecules, which code for the production of proteins.

- **Controversies on Implantation of growth hormones in food**

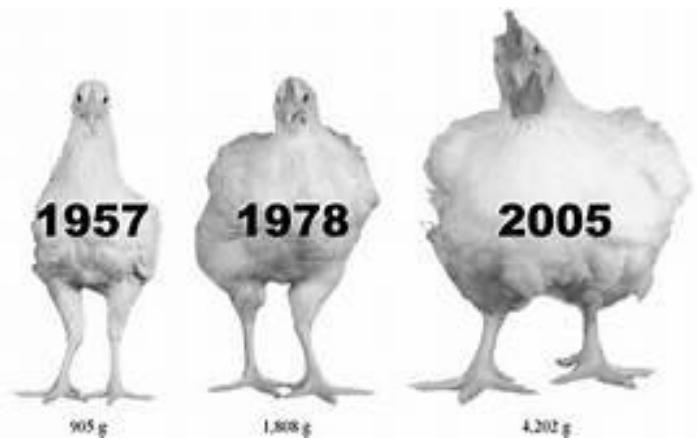
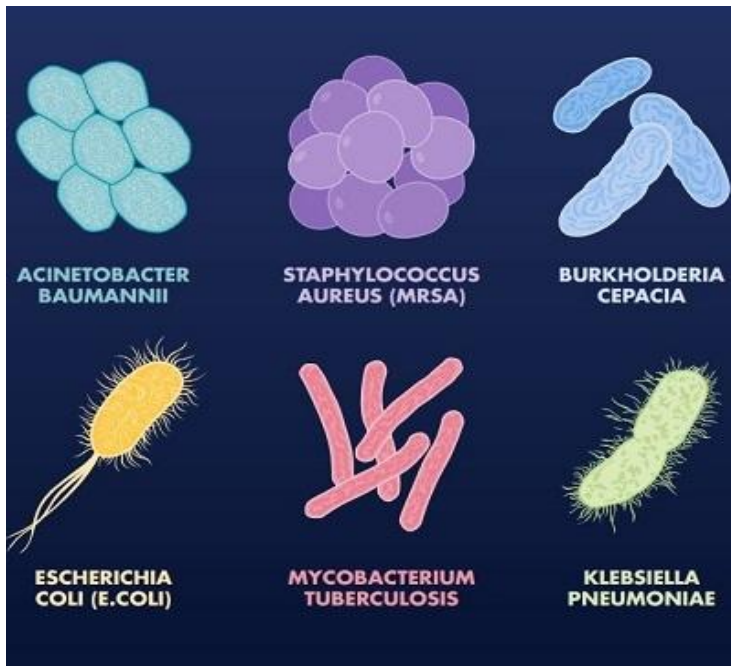
The use of hormones and antibiotics in animal feed has been a controversial topic for many years. There are obvious advantages and disadvantages with the use of such products. Farmers see hormones and antibiotics as a major advantage as they increase their profits and gain the maximum out of their livestock. However, health concerned organizations want to ban the use of these products due to the increasing fears that they can cause harm to the consumers.

- i. Advantages of Implantation of hormones in food

- a) Boost production of food
    - b) Increase(maximize)the profits of the producers
    - c) More good-looking food can be produced
    - d) Allow Mass production of food

- i. Disadvantages of Implantation of hormones in food

- a) May harm the food animals' health
    - b) may favor the proliferation of *drug resistant microorganisms*(耐藥微生物)
    - c) Leave residues in meat, milk and eggs, which is objectionable.
    - d) Long term intake of hormone residue harms people's health



- **Impacts of Hormones in the Food Supply the Human Body**

Hormones, which are fat-soluble molecules, can be stored in fat tissue and accumulate to potentially harmful levels. Because of this, women, due to their naturally higher body fat percentage, may be at greater risk of detrimental health effects from hormones in food. *Breast lumps* (乳房腫塊), some of which can become cancerous, are caused by imbalanced hormone levels, and eating a diet high in hormone-supplemented meats

may add to the problem. By contrast, *phytoestrogens* (植物雌激素) -- naturally occurring *estrogen-like compounds* (雌激素樣化合物) in foods such as soy -- have estrogenic effects on parts of the body where they can be protective, such as your bones and heart, while blocking estrogen's effects on reproductive organs, where it can promote cancer, effectively increasing *estrogen's beneficial effects* (雌激素的有益作用) and decreasing its harmful effects.

Chemical growth promoter used in cattle may affect growth rates in girls. The compound, called *zeranol* (玉米赤黴醇), is an endocrine disruptor that blocks estrogen, resulting in growth rate abnormalities. In a study, 78.5 percent of the girls had measurable levels of zeranol. These girls were shorter, on average, and showed slower rates of breast development than girls with no detectable levels of the chemical. Researchers called for larger, more diverse studies to further clarify their results.

- **Prevention of uptaking too much hormone additives in food**

1. Wash the food completely to wash as much additives that deposit on the surface as you can
2. Cook the food to well-done state to kill the harmful microorganisms that carry the drug
3. Choose your food wisely by looking for its place of origin
4. Purchase more organic food from the Organic farm instead of buying food from supermarkets



# RELAXING TIME!

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