

¹ Study on the Development of Anti-Microbial Substitute Products
² Such as Fermented Feed and Chinese Medicine Feed

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⁶ **Abstract**

⁷ In this paper, the background of the development of anti-ban substitute products, the present
⁸ situation and development prospect of anti-ban substitute products fermented feed, Chinese
⁹ medicine feed and Chinese medicine feed additives, classification of fermented feed products,
¹⁰ fermentation strains, processing technology and equipment requirements. The traditional
¹¹ Chinese medicine prescription medicine is the source of the traditional Chinese medicine feed
¹² additive, making the traditional Chinese medicine dregs fermented feed is the main way to
¹³ utilize the traditional Chinese medicine dregs. This paper mainly introduces the source and
¹⁴ treatment experiment of feed additive of Pulsatilla decoction for preventing and curing piglet
¹⁵ diarrhea.

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¹⁷ **Index terms**— fermented feed, traditional chinese medicine feed and traditional chinese medicine feed
¹⁸ additives, fermented strains, baitouweng soup feed additives,

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²⁷ utilize the traditional Chinese medicine dregs. This paper mainly introduces the source and treatment experiment
²⁸ of feed additive of Pulsatilla decoction for preventing and curing piglet diarrhea. The experiment shows that the
²⁹ cure rate of piglet diarrhea is 90.0% and the average cure days are 3.6 days, the cure rate was 94.0% and the
³⁰ average cure time was 2.8 days in the Ofloxacin group, and 92.0% and the average cure time was 3.3 days in the
³¹ Baitouweng decoction group. There was no significant difference between the three groups (P & GT; 0.05), 15%
³² baitouweng soup feed additive can replace antibiotics and traditional Chinese medicine prescription medicine.
³³ With the advent of the era of anti-resistance, it is necessary to update the knowledge of fermented feed and
³⁴ traditional Chinese medicine feed additives.

³⁵ Keywords: fermented feed, traditional chinese medicine feed and traditional chinese medicine feed additives,
³⁶ fermented strains, baitouweng soup feed additives, processing technology and equipment requirements.I.

³⁷ Background of the Development of Anti-Bacterial Substitutes such as Fermented Feed and Chinese Medicine
³⁸ Feed China's Ministry of Agriculture and rural areas 'pilot Action Plan for reduction in the use of veterinary
³⁹ antimicrobials 2018 -Prohibition of the use of pharmaceutical feed additives in feedstuffs by 2021 until the end
⁴⁰ of 2020, and formulated a series of "feed anti-resistance" regulations and "breeding end of anti-reduction, limit
⁴¹ anti-" regulations. The harm of drug feed additives and misuse of antibiotics in breeding end has been recognized
⁴² by people, but some people think that the comprehensive "feed prohibition" will cause the production level of
⁴³ breeding industry to drop, the breeding cost will increase greatly, and the early stage of "feed prohibition", on the

5 II. FERMENTATION SUBSTRATE AND STRAIN SELECTION

44 contrary, the quantity of antibiotics used at the end of breeding increased, and "reducing resistance and limiting
45 resistance at the end of breeding" became empty words. It is believed that anti-resistance will have an impact
46 on animal husbandry: 1 Part of the survival of feed enterprises. Design of feed products. The implementation
47 of the licensed veterinary surgeon system will be speeded up. 4. "Meat Without Resistance" becomes a new
48 selling point. "TIKANG" products to meet the historical opportunities, this huge market space vacated by the
49 "fermented feed, Chinese medicine feed, Chinese veterinary medicine, probiotics, " etc. , the future of these
50 four categories of product manufacturers, operators or become the biggest beneficiaries, will usher in a spurt of
51 growth. 6 The farm pays more attention to the hardware investment in the environment. Therefore, it is very
52 important to develop and reserve alternative products such as fermented feed and traditional Chinese medicine
53 feed. Only when the product of alternative medicine feed additive is mature, developed successfully and reaches
54 a certain reserve amount, "breeding end to reduce resistance, limit resistance" will be achieved.

55 2 II.

56 3 Development of Fermented Feed Products a) Concept and 57 Product Classification of Fermented Feed

58 The concept of fermented feed: fermented feed refers to the full price feed or feed raw materials added beneficial
59 bacteria for fermentation, beneficial microorganisms through their own metabolic activities, the anti-nutritional
60 factors in plant, animal and mineral substances are decomposed and transformed into higher nutrient and non-
61 toxic feed which is more easily taken up and digested by animals. In pig production, 5-10% is usually added to
62 the Diet.

63 Fermented feed product classification: divided into three categories: 1 general raw material production of
64 fermented feed: This category is very broad, because can be divided into conventional raw materials of products
65 too many. This category is currently the most used in the field of aquaculture products. Corn meal, wheat
66 bran, soybean meal, cotton meal, peanut meal, palm meal and other fermented feed. 2 Green Plants fermented
67 feed: Green plants are mainly Broussonetia Papyrifera, opuntia Mori, whole-plant corn, giant fungus grass, etc. .
68 These plants are rich in nutritional value. After improvement, they are now planted in large quantities, especially
69 Broussonetia PAPYRIFERA and OPUNTIA Mori, is the national key support project, but this kind of plants
70 do fermentation feed, there are certain limitations, that is, seasonal is strong, must concentrate harvesting and
71 centralized processing, and more suitable for the combination of planting and breeding mode. 3 The fermented
72 feed of the Offal of life: The most common is the fermented feed of bean dregs and distiller's grains, the low-cost
73 raw materials, and the mixed fermented strains are used to make the fermented feed, in fact, it is a kind of
74 recycling of resources, it is a kind of feedstuff with great development prospect.

75 4 b) Common Key Techniques of Fermented Feed i. Fermenta- 76 tive Strains

77 Fermentation strains are bacillus subtilis, bacillus Bacillus licheniformis, antimicrobial peptide bacillus, lacto-
78 bacillus acidophilus, clostridium Butyricum, saccharomyces CEREVISIAE, lactic acid bacteria and so on.

79 5 ii. Fermentation Substrate and Strain Selection

80 Singly or in combination. Is Advantageous to the metabolism product production, is advantageous in the
81 digestion, the absorption, is advantageous in the digestion toxic, the harmful or the anti-nutrition material.
82 Strain selection for fermentation substrate on different species of specific requirements: Control Mold Growth,
83 production of antimicrobial substances, taste acid (not just acid), production of enzymes, high acid.

84 The main ingredients containing anti-nutritional factors are: 1 Cottonseed meal (cake): 1 cycloacrylic acid
85 (egg white turns pink) and (??) Gossypol (free gossypol turns egg Yolk Olive). 2 Rapeseed meal (cake): 1)
86 Sulfur Glucoside, which can be hydrolyzed into harmful substances thiocyanate and ISOTHIOCYANATE, which
87 affect iodine metabolism; 2) myrosinase (eggs produce fishy smell). Flaxseed or flaxseed cake: flaxseed Gum,
88 phytic acid, allergen, cyanogenic glycosides, trypsin inhibitors, anti-VB6 factors, etc. 3 CASSAVA DREGS:
89 CYANOGENIC glucosides (including Linamarin and Stemonidin) can be converted to hydrocyanic acid. Potato
90 (potato) dregs: GLYCOALKALOID (mainly containing Solanine), is an inhibitor of cholinesterase. 5 Sorghum:
91 Tannin Reduces Palatability and Trypsin and alpha-amylase activity, forming a complex with VB12 to reduce
92 VB12 absorption. 6 Palm Meal:-Mannan accounted for about 1 / 3 of the dry weight (NSP), dissolved in water
93 to form a GEL, so that the contents of the digestive tract have a strong viscosity. Strain selection: spore-based
94 special directional screening, strong specificity (for a certain or several anti-nutritional factors), can degrade
95 protein, fiber and other macromolecules, and produce a wealth of small and medium-sized new molecules. Rich
96 in enzyme and acid production.

97 Crude fiber rich, medium protein residue bran and other raw materials: Animal Slaughter and processing
98 by-products: protein-rich, perishable, easily infectious pathogens, heat inactivated raw materials, there are: 1
99 Aquatic Processing Waste: Viscera, fish scales, skin, head, blood. LIVESTOCK AND POULTRY SLAUGHTER
100 WASTE: Gastrointestinal contents, waste offal. Livestock and poultry blood, feathers: There are professional

101 companies to deal with, raw materials for intense, highvalue direction is the production of peptide products.
102 LIVESTOCK AND POULTRY BONES: production of meat and bone meal, a professional company to deal
103 with. 5 Dead Animals: Professional Companies, according to the law, made of meat and bone meal. Common
104 Principles for processing: Hydrolysis by high pressure cooking or drying at 125°C. After cooking, fermentation,
105 select spore, yeast, lactic acid and other complex bacteria plus enzyme hydrolysis. iv. Quality Control and
106 Testing Physics: Ph, color, taste, fluidity, etc. BIOCHEMISTRY: Fatty Acids, conventional nutrients (dry basis,
107 fresh moisture), toxins, etc. characteristics seriously affect the safety: Bacteria and improper storage, 1 week or
108 so moldy.

109 **6 v. Technical And Equipment Requirements For**

110 Fermented Feed Equipment Requirements:

111 The equipment is fermentation tank, tank, or plastic bucket. The sealed container is used for all kinds of
112 fermentation substrate fermentation. Traditional Chinese medicine mostly comes from nature, with little toxicity
113 and side effect, low residue, reliable efficacy, safe use and high application value 1. Chinese medicine feed additive
114 will replace antibiotic feed additive and play an important role in prevention and cure of animal epidemic disease.
115 Chinese medicine is a treasure trove, such as Li Shizhen's Bencao Gangmu of the Qing Dynasty, 52 volumes, 1.9
116 million words, a collection of 1,892 Chinese herbs, 1,160 illustrations, and 11,096 prescriptions. Before modern
117 times in China, human and animal plague occurred, that is to say, the Chinese herbal medicine decoction was
118 used to eliminate the 2.

119 There are many prescription drugs of traditional Chinese medicine, the total effect of preventing and curing
120 diseases is more than 85%. Due to the limited space of this article, the following are just 7 examples of traditional
121 Chinese medicine prescription drug sources, formula plus or minus, treatment (anthelmintic) disease types.

122 1 Qingre Jiedu Representative Fang Yihuanglian Jiedu Tang Waitai Mi: huanglian 30g, huangqin 45g, huangbai
123 45g, Gardenia 30g. This prescription can be used for septicemia, Sepsis, dysentery, pneumonia and various acute
124 diseases. Add Dandelion 30G, double flower 30g, folium Isatidis 35g, Radix isatidis 35g, agastache 25g, enhance
125 the antibacterial and detoxification function. (2) the prescription of Xie Xia Representative Fang Yi da Cheng
126 Qi Tang Shang Han Lun: Rhubarb 60 ~90g (lower back) , magnolia officinalis 30g, trifoliate trifoliate 30g,
127 mirabilite 150 ~300G (Chong). Witness fecal constipation knot, abdominal fullness, two will not pass, dry
128 mouth, thick and dry moss, heavy pulse. The addition and subtraction of this prescription can treat constipation
129 in pigs. 3 Yu Jin San (Yu Jin 35g, Huang Qin 35g, rhubarb 30g, coptis 30g, Phellodendron Amurense 30g,
130 Terminalia Chebula 25g, Radix paeoniae alba 25g) to treat damp-heat diarrhea. When hot, should go to
131 Terminalia Chebula, add honeysuckle 30g, forsythia 30g, to heat detoxification.4 Xinliangjie, a representative
132 of Fangyiyinqiao powder, was composed of 30g of Flos Lonicerae, 30g of Forsythia SUSPENSA, 25g of semen
133 sojae praeparatum, 25g of Platycodon Grandiflorum, 25g of Schizonepeta Tenuifolia, 30g of Lophatheri, 15g of
134 mint, 20g of Niupanzi, 60g of asparagus root and 10g of licorice root. For the flu, bronchitis, pneumonia. Fever
135 is even, add Gardenia, scutellaria, plaster to heat. 5 for all types of ASCITES junling powder. CODONOPSIS
136 PILOSULA 30g, atractylodes macrocephala 30g, poria 30g, rhizoma alismatis 40g, Ramulus CINNAMOMI 25g,
137 rhizoma atractylodis 15g, radix sophorae flavescentis 20g, cinnamon 20g, Ephedra 20g, Angelica 30g, dried
138 Tangerine 30g.6 Recipe of Leonurus Heterophyllus 60g, Angelica 45g, chuanxiong 30g, taoren 35g, Huangqi 30G,
139 Dandelion 25g, honeysuckle 25g, liquorice 20g. 7 Insect repellent on behalf of Fang Yi areca powder. ARECA
140 CATECHU 24g, cortex Melia Azedarach 18g, fructus AURANTII 15g, mirabilite (lower back)15g, Crane Louse
141 9G, Rhubarb 9G, 12g. Deworming. This prescription is a relatively safe antiascaris agent. If the disease pig
142 constitution is good, may add the thunder pill 9G, enhances drives the ascaris effect.

143 Traditional Chinese medicine feed additive is made into traditional Chinese medicine feed additive according
144 to the proportion of each traditional Chinese medicine prescription medicine, take 3.3 made Baitouweng soup
145 feed additive as an example, not one example.

146 **7 b) Traditional Chinese Medicine fermented feed and tradi-** 147 **tional Chinese Medicine Dregs fermented feed**

148 Chinese Medicine fermented feed: refers to Chinese medicine slices and extracts by-products as substrate, under a
149 certain temperature and humidity, through the inoculation of SACCHAROMYCES cerevisiae, subtilis, lactic acid
150 bacteria and other strains and complex protease, cellulase, enzymes such as Xylanase make it undergo aerobic
151 and anaerobic fermentation, fully expose the effective components of traditional Chinese medicine, improve
152 its efficacy, and make the anti-nutritional factors in the feed decompose or transform, resulting in more animal
153 feeding, digestion, absorption and higher nutrition, sAFE, non-toxic feed. Traditional Chinese medicine fermented
154 feed can stimulate the animal's own non-Hapten function, play a disease treatment, disease prevention role.

155 Chinese Medicine Dregs fermented feed: millions of tons of Chinese medicine dregs are disposed of every year,
156 resulting in huge waste of resources. Because the dregs also contain drug ingredients and nutrients, has not
157 been absorbed by the human body, such as Ginseng, astragalus, Chuanxiong, tuckahoe dregs polysaccharide,
158 glycosides, bases, amino acids, micronutrient remaining 20~30%. The traditional Chinese medicine dregs were
159 collected and fermented to make the traditional Chinese medicine dregs fermented feed. Making fermented feed
160 from Chinese medicinal dregs is the main way for the utilization of Chinese medicinal dregs.

161 **8 c) Feeding additives of Pulsatilla decoction as a**

162 substitute for medical feed additives in the treatment of piglet diarrhea Drug feed additives (products) were
163 previously designed for the prevention and treatment of piglet diarrhea, one is high zinc feed additives (the
164 maximum zinc content in the formulated feed for piglets is 110mg / kg, and the treatment of diarrhea in piglets
165 is increased to 1600mg / kg by zinc oxide or basic zinc chloride) , the other is antibiotic feed additives, there are
166 Aureomycin Premix, oxytetracycline calcium premix, bacitracin zinc premix and so on.

167 "Baitouweng decoction" was first published in the treatise on Febrile Diseases. Jue Yin Chapter, it is composed
168 of 4 herbs: Pulsatilla Chinensis, Cortex Phellodendri, Rhizoma Coptidis and CORTEX Fraxini. Pulsatilla
169 Chinensis can clear away heat and toxin, cool blood and treat dysentery. The combination of the four herbs
170 can clear away heat and detoxication, cool blood and stop dysentery. The results showed that the cure rate
171 of Group II was 90.0% , and the average cure time was 3.6 days, the cure rate of Group II was 94.0% , the
172 average cure time was 2.8 days, the cure rate of group I was 92.0% , the average cure time was 3.3 days, the
173 difference was not significant (P & GT; 0.05) , the results showed that 15% BAITOUWENG decoction could
174 replace the prescription of Ofloxacin and Baitouweng decoction, the cure rate of Group II was 80.0% and the
175 average cure time was 4.5 days, the difference was significant (P & Lt; 0.05) , the results showed that the 10%
176 Baitouweng decoction with feed additive was too little to reach the prescription dosage of Baitouweng decoction,
177 which affected the therapeutic effect. Therefore, 10% baitouweng soup feed additives can only be used as a
178 preventive amount, treatment of 15% to 20% (add 15-20%), in order to achieve the Baitouweng soup prescription
179 drug treatment effect.

180 IV.

181 **9 Conclusion**

182 It is still in the research and development stage at present. Although there are many commercial products on
183 the market, because of the late start, new subjects, the theoretical research, feeding experiment and practical
184 application of fermented feed should be strengthened. Therefore, with the advent of the era of prohibition
185 and resistance, agricultural colleges and universities have strengthened the education of fermented feed, Chinese
186 veterinary medicine and Chinese medicine feed for undergraduates, and strengthened the on-the-job training
187 for livestock workers, vocational Training and knowledge updating education of fermented feed and traditional
Chinese medicine feed are very important.



Figure 1:

Figure 2:

1

Chinensis, pulsatilla Chinensis, pulsatilla Chinensis, pulsatilla Chinensis, pulsatilla Chinensis, pulsatilla Chinensis, Dauconin and Glycoprotein. The different extracts of Pulsatilla Chinensis and the composition of Pulsatilla Chinensis decoction have bacteriostatic effect on

Pseudomonas Aeruginosa and paratyphoid Bacillus 6.

According to the formula of Baitouweng decoction:

Baitouweng 60g, cortex phellodendri 45g, cortex fraxini 45g, Rhizoma Coptidis 45g, semen Plantaginis 35g, tuckahoe 25g, rhizoma atractylodis 25g each, 280g subtotal. Baitouweng Soup Chinese medicine feed additive was confected by percentage: Baitouweng 21.4% (6028000.214,0214100% 21.4% , same as below) , cortex phellodendri 16.1% , cortex FRAXINI 16.1% , rhizoma COPTIDIS 16.1% , rhizoma plantaginis 12.5% , poria 8.9% , RHIZOMA ATRACTYLODIS 8.9% . Used to replace antibiotics, antibiotics feed additives and PULSATILLA decoction prescription medicine.

Staphylococcus, *Escherichia*

Pulsatilla decoction feed additives in treating piglet diarrhea? Can baitouweng soup feed additive replace antibiotic, antibiotic feed additive and Baitouweng Soup prescription drug? Therefore, the author designed and carried out a test to treat piglet diarrhea, using Ofloxacin injection treatment group as control group, Baitouweng decoction prescription drug treatment group as group I, 15% Baitouweng decoction feed additive group as Group II, 10% baitouwengtang feed additive group III was used to treat diarrhea piglets in order to confirm whether Chinese medicine feed additive can replace antibiotics and Chinese medicine prescription. From December 2,2018 to February 27,2019,50 pigs in each group were tested in Dongkou Jiajing Agriculture and Animal Husbandry Co. , Ltd. (7000 pig farms) . The results are shown in Table 1.

How effective are pulsatilla d

Figure 3: Table 1 :

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