Notice

DESCRIPTION CN118556783A

A high-protein duckweed feed and its preparation method

一种高蛋白浮萍饲料及其制备方法

[0001]

Technical Field

技术领域

[n0001]

This invention relates to the field of feed technology, and in particular to a high-protein duckweed feed and its preparation method.

本发明涉及饲料技术领域，尤其是一种高蛋白浮萍饲料及其制备方法。

[0003]

Background Technology

背景技术

[n0002]

Duckweed is an aquatic plant, belonging to the category of floating-leaved plants.

浮萍是一种水生植物，属于浮叶植物中的一类。

It grows in water and usually floats on the surface, hence the name duckweed.

它在水中生长，通常漂浮在水面上，因此得名为浮萍。

Duckweed, scientifically known as Salvinia, belongs to the family Lymnaceae, which includes multiple species. Duckweed is a special aquatic plant with characteristics such as floating growth, specialized leaves, and important ecological functions.

浮萍的学名为"Salvinia"，属于萍蓬科植物，包括多个物种，浮萍是一种特殊的水生植物，具有漂浮生长、叶片特化和重要的生态功能等特点。

It has certain applications and significance in feed, ornamental purposes, and aquatic ecosystems.

它在饲料、观赏和水生态系统中都有一定的应用和意义。

[n0003]

Duckweed feed is an animal feed made primarily from duckweed, and it is rich in protein and other nutrients.

浮萍饲料是一种以浮萍为主要原料制备的动物饲料，其含有丰富的蛋白质和其他营养成分。

Duckweed is an aquatic plant with high protein content and good nutritional value, and is therefore widely used in animal husbandry.

浮萍是一种水生植物，具有高蛋白质含量和良好的营养价值，因此被广泛应用于动物饲养领域。

[n0004]

Existing duckweed feeds lack nutritional balance and have complex production processes. Here we propose a high-protein duckweed feed and its preparation method.

现有的浮萍饲料营养均衡性不足，且制作工艺较为繁杂，在这里我们提出一种高蛋白浮萍饲料及其制备方法。

[0007]

Summary of the Invention

发明内容

[n0005]

To address the shortcomings of the aforementioned technology, this invention employs a modified technical solution: a high-protein duckweed feed comprising carbohydrate protein, fat, minerals and vitamins, and additives. The carbohydrate protein accounts for 55-75% of the total weight, the fat accounts for 5-12% of the total weight, the minerals and vitamins account for 2-8% of the total weight, and the additives account for 5-15% of the total weight.

本发明为解决上述技术不足，采用改性的技术方案，一种高蛋白浮萍饲料，包括有碳水蛋白成分、脂肪成分、矿物质和维生素成分、添加剂成分，所述碳水蛋白成分占总重量的55-75%，所述脂肪成分占总重量的5-12%，所述矿物质和维生素成分占总重量的2-8%，所述添加剂成分占总重量的5-15%。

[n0006]

As a further preferred embodiment of the present invention, the raw materials for the carbohydrate protein components include 60-100 parts of duckweed powder, 5-30 parts of soybean meal, 8-30 parts of rapeseed meal, 12-30 parts of cottonseed meal, 4-8 parts of corn, 6-15 parts of soybean leaves, 10-20 parts of pea hulls, 2-8 parts of fish meal, and 6-10 parts of meat and bone meal.

作为本发明的进一步优选方式，所述碳水蛋白成分的原料包括浮萍粉末60-100份、豆粕5-30份、菜籽粕8-30份、棉籽粕12-30份、玉米4-8份、黄豆叶6-15份、豌豆皮10-20份、鱼粉2-8份、肉骨粉6-10份。

[n0007]

As a further preferred embodiment of the present invention, the fat components include 2-6 parts soybean oil, 3-8 parts cottonseed oil, 2-4 parts chicken fat, 2-10 parts duck fat, and 1-6 parts cod liver oil.

作为本发明的进一步优选方式，所述脂肪成分包括有，大豆油2-6份、棉籽油3-8份、鸡脂2-4份、鸭脂2-10份、鱼肝油1-6份。

[n0008]

As a further preferred embodiment of the present invention, the mineral and vitamin components include 3-5 parts of dicalcium phosphate, 1-2.5 parts of sodium alginate, 1.5-2.5 parts of thiamine, 1.6-3 parts of riboflavin, 2-5 parts of cyanocobalamin, and 1-3 parts of vitamin C.

作为本发明的进一步优选方式，所述矿物质和维生素成分包括有磷酸氢钙3-5份、海藻酸钠1-2.5份，硫胺素1.5-2.5份，核黄素1.6-3份、氰钴胺2-5份、维生素C1-3份。

[n0009]

As a further preferred embodiment of the present invention, the additive components include 2.5-4 parts of Bifidobacterium, 2-6 parts of yeast, 1-4 parts of cellulase, 2-4 parts of protease, 0.2-0.8 parts of butylated hydroxybenzene, 0.4-0.8 parts of calcium propionate, and 1-2 parts of meat flavoring.

作为本发明的进一步优选方式，所述添加剂成分包括有，双歧杆菌2.5-4份，酵母菌2份-6份，纤维酶1份-4份，蛋白酶2份-4份，丁基羟基苯0.2份-0.8份，丙酸钙0.4份-0.8份，肉类香精1-2份。

[n0010]

As a further preferred embodiment of the present invention, the following steps are included:

作为本发明的进一步优选方式，包括以下步骤，

[n0011]

S1. Accurately weigh all the ingredients according to the proportions in the formula and put them into appropriate containers. Mix the duckweed powder with soybean meal, rapeseed meal, cottonseed meal, corn, soybean leaves, pea husks, fish meal and meat and bone meal, and stir well.

S1、按照配方中的比例准确称量各种原料，并将它们分别放入适当的容器中，将浮萍粉末与豆粕、菜籽粕、棉籽粕、玉米、黄豆叶、豌豆皮、鱼粉和肉骨粉混合在一起，搅拌均匀；

[n0012]

S2. Mix the soybean oil, cottonseed oil, chicken fat, duck fat and cod liver oil together, then add them to the above steps, stir evenly, and then perform ultrasonic vibration. The vibration time is controlled at 2-4 hours and the temperature is controlled at 65-78°C.

S2、将上述将大豆油、棉籽油、鸡脂、鸭脂和鱼肝油混合在一起，然后加入至上述步骤中，搅拌均匀，然后进行超声震荡，震荡时间控制在2-4h，温度控制在65-78°C；

[n0013]

S3. Then mix together calcium hydrogen phosphate, sodium alginate, thiamine, riboflavin, cyanocobalamin, and vitamin C, stir well and add to the mixture, stirring thoroughly for 1 hour.

S3、再将磷酸氢钙、海藻酸钠、硫胺素、核黄素、氰钴胺、维生素C混合在一起，搅拌均匀加入，进行充分的搅拌混合均匀，搅拌控制时间在1h；

[n0014]

S4. Finally, add Bifidobacterium, yeast, cellulase, protease, butylated hydroxybenzene, calcium propionate and meat flavoring to the materials in the above steps, then centrifuge and stir at a temperature of 48-82°C for 1 hour, and then let stand for 20 minutes.

S4、最后将双歧杆菌、酵母菌、纤维酶、蛋白酶、丁基羟基苯、丙酸钙和肉类香精倒入上述步骤的材料在一起，然后进行离心搅拌处理，温度控制在48-82℃，搅拌控制1h，然后静置20min；

[n0015]

S5. The final mixture is made into pellets or blocks suitable for feeding by extrusion or granulation, and then dried to remove excess moisture, thus completing the processing.

S5、将最终混合物通过挤压或造粒的方式制成适合饲喂的颗粒状或块状饲料，并进行干燥处理，以去除多余的水分即完成加工。

[n0016]

As a further preferred embodiment of the present invention, in step S3, the stirring temperature is controlled at 45°C and the stirring speed is controlled at 120 r/min-240 r/min.

作为本发明的进一步优选方式，步骤S3中，搅拌温度控制在45℃，搅拌转速控制在120r/min-240r/min。

[n0017]

As a further preferred embodiment of the present invention, the method for producing the duckweed powder involves collecting fresh duckweed, separating and cleaning the duckweed, soaking the collected duckweed in clean water for 2-4 hours to remove surface impurities, separating the duckweed from the water using a filter while retaining the duckweed itself, placing the separated duckweed into a drying device, controlling the temperature between 65-90°C, and pulverizing the dried duckweed to obtain duckweed powder with a particle size range of 100 mesh to 400 mesh.

作为本发明的进一步优选方式，所述浮萍粉末的制作方法，采集新鲜浮萍，浮萍分离与清洗，将采集到的浮萍放入清水中浸泡2-4h，去除表面的杂质，使用过滤器将浮萍与水分离，保留浮萍本身，将分离的浮萍放入烘干设备，温度控制在65-90°C之间，将干燥的浮萍进行粉碎，得到浮萍粉末，粒径范围为100目至400目。

[n0018]

Beneficial effects

有益效果

[n0019]

The high-protein duckweed feed formulation and preparation method of the present invention result in a feed with rich protein content, which can provide high-quality protein nutrition for farmed animals, help promote animal growth, development and health. Through reasonable formulation ratio and the use of additives, the feed can provide animals with a variety of nutrients, including carbohydrates, fats, minerals and vitamins, which helps maintain the nutritional balance of animals.

本发明的高蛋白浮萍饲料的配方和制备方法使得其具有丰富的蛋白质含量，能够为养殖动物提供高质量的蛋白质营养，有助于促进动物的生长发育和健康，通过合理的配方比例和添加剂的使用，该饲料可以提供动物所需的多种营养成分，包括碳水化合物、脂肪、矿物质和维生素等，有助于维持动物的营养均衡。

Improving feed utilization: The use of additives and the preparation method of duckweed powder can improve the digestibility and utilization of feed, reduce waste, and improve the absorption and utilization efficiency of nutrients in feed by farmed animals. Duckweed is used as a raw material. Duckweed has the characteristics of rapid growth and rich nutrition. It can effectively utilize duckweed resources, reduce dependence on traditional feed raw materials, and has the characteristics of environmental protection and sustainability. In addition, the

feed contains additives such as bifidobacteria, yeast, cellulase, protease, butylated hydroxybenzene, calcium propionate and meat flavoring. The use of additives can improve the digestibility and utilization of feed and enhance the digestive capacity and immunity of farmed animals.

提高饲料利用率：添加剂的使用和浮萍粉末的制备方法可以提高饲料的消化利用率，减少浪费，提高养殖动物对饲料中营养成分的吸收和利用效率，利用了浮萍作为原料，浮萍具有快速生长和丰富的营养特点，可以有效利用浮萍资源，减少对传统饲料原料的依赖，具有环保和可持续的特点，且该饲料中添加了双歧杆菌、酵母菌、纤维酶、蛋白酶、丁基羟基苯、丙酸钙和肉类香精等添加剂，添加剂的使用可以提高饲料的消化利用率，增强养殖动物的消化能力和免疫力。

[0023]

Detailed Implementation

具体实施方式

[n0020]

The technical solutions of the present invention will be clearly and completely described below with reference to the embodiments of the present invention. Obviously, the described embodiments are only some embodiments of the present invention, and not all embodiments.

下面将结合本发明实施例中，对本发明实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅仅是本发明一部分实施例，而不是全部的实施例。

Based on the embodiments of the present invention, all other embodiments obtained by those skilled in the art without creative effort are within the scope of protection of the present invention.

基于本发明中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本发明保护的范围。

[n0021]

This invention provides a technical solution: a high-protein duckweed feed and its preparation method, comprising carbohydrate protein components, fat components, mineral and vitamin components, and additive components, wherein the carbohydrate protein

components account for 55-75% of the total weight, the fat components account for 5-12% of the total weight, the mineral and vitamin components account for 2-8% of the total weight, and the additive components account for 5-15% of the total weight.

本发明提供一种技术方案：一种高蛋白浮萍饲料及制备方法，包括有碳水蛋白成分、脂肪成分、矿物质和维生素成分、添加剂成分，所述碳水蛋白成分占总重量的55-75%，所述脂肪成分占总重量的5-12%，所述矿物质和维生素成分占总重量的2-8%，所述添加剂成分占总重量的5-15%。

[n0022]

The raw materials for carbohydrate protein components include 60-100 parts of duckweed powder, 5-30 parts of soybean meal, 8-30 parts of rapeseed meal, 12-30 parts of cottonseed meal, 4-8 parts of corn, 6-15 parts of soybean leaves, 10-20 parts of pea hulls, 2-8 parts of fish meal, and 6-10 parts of meat and bone meal.

碳水蛋白成分的原料包括浮萍粉末60-100份、豆粕5-30份、菜籽粕8-30份、棉籽粕12-30份、玉米4-8份、黄豆叶6-15份、豌豆皮10-20份、鱼粉2-8份、肉骨粉6-10份。

[n0023]

The fat components include 2-6 parts soybean oil, 3-8 parts cottonseed oil, 2-4 parts chicken fat, 2-10 parts duck fat, and 1-6 parts cod liver oil.

脂肪成分包括有，大豆油2-6份、棉籽油3-8份、鸡脂2-4份、鸭脂2-10份、鱼肝油1-6份。

[n0024]

The mineral and vitamin components include 3-5 parts dicalcium phosphate, 1-2.5 parts sodium alginate, 1.5-2.5 parts thiamine, 1.6-3 parts riboflavin, 2-5 parts cyanocobalamin, and 1-3 parts vitamin C.

矿物质和维生素成分包括有磷酸氢钙3-5份、海藻酸钠1-2.5份，硫胺素1.5-2.5份，核黄素1.6-3份、氰钴胺2-5份、维生素C1-3份。

[n0025]

The additives include 2.5-4 parts Bifidobacterium, 2-6 parts yeast, 1-4 parts cellulase, 2-4 parts protease, 0.2-0.8 parts butylated hydroxybenzene, 0.4-0.8 parts calcium propionate, and 1-2 parts meat flavoring.

添加剂成分包括有，双歧杆菌2.5-4份，酵母菌2份-6份，纤维酶1份-4份，蛋白酶2份-4份，丁基羟基苯0.2份-0.8份，丙酸钙0.4份-0.8份，肉类香精1-2份。

[n0026]

Includes the following steps,

包括以下步骤，

[n0027]

S1. Accurately weigh all the ingredients according to the proportions in the formula and put them into appropriate containers. Mix the duckweed powder with soybean meal, rapeseed meal, cottonseed meal, corn, soybean leaves, pea husks, fish meal and meat and bone meal, and stir well.

S1、按照配方中的比例准确称量各种原料，并将它们分别放入适当的容器中，将浮萍粉末与豆粕、菜籽粕、棉籽粕、玉米、黄豆叶、豌豆皮、鱼粉和肉骨粉混合在一起，搅拌均匀；

[n0028]

S2. Mix the soybean oil, cottonseed oil, chicken fat, duck fat and cod liver oil together, then add them to the above steps, stir evenly, and then perform ultrasonic vibration. The vibration time is controlled at 2-4 hours and the temperature is controlled at 65-78°C.

S2、将上述将大豆油、棉籽油、鸡脂、鸭脂和鱼肝油混合在一起，然后加入至上述步骤中，搅拌均匀，然后进行超声震荡，震荡时间控制在2-4h，温度控制在65-78℃；

[n0029]

S3. Then mix together calcium hydrogen phosphate, sodium alginate, thiamine, riboflavin, cyanocobalamin, and vitamin C, stir well and add to the mixture, stirring thoroughly for 1 hour.

S3、再将磷酸氢钙、海藻酸钠、硫胺素、核黄素、氰钴胺、维生素C混合在一起，搅拌均匀加入，进行充分的搅拌混合均匀，搅拌控制时间在1h；

[n0030]

S4. Finally, add Bifidobacterium, yeast, cellulase, protease, butylated hydroxybenzene, calcium propionate and meat flavoring to the materials in the above steps, then centrifuge and stir at a temperature of 48-82°C for 1 hour, and then let stand for 20 minutes.

S4、最后将双歧杆菌、酵母菌、纤维酶、蛋白酶、丁基羟基苯、丙酸钙和肉类香精倒入上述步骤的材料在一起，然后进行离心搅拌处理，温度控制在48-82℃，搅拌控制1h，然后静置20min；

[n0031]

S5. The final mixture is made into pellets or blocks suitable for feeding by extrusion or granulation, and then dried to remove excess moisture, thus completing the processing.

S5、将最终混合物通过挤压或造粒的方式制成适合饲喂的颗粒状或块状饲料，并进行干燥处理，以去除多余的水分即完成加工。

[n0032]

In step S3, the stirring temperature is controlled at 45°C and the stirring speed is controlled at 120r/min-240r/min.

步骤S3中，搅拌温度控制在45°C，搅拌转速控制在120r/min-240r/min。

[n0033]

The method for making duckweed powder involves collecting fresh duckweed, separating and cleaning the duckweed, soaking the collected duckweed in clean water for 2-4 hours to remove surface impurities, separating the duckweed from the water using a filter, retaining the duckweed itself, placing the separated duckweed into a drying device, controlling the temperature between 65-90°C, and pulverizing the dried duckweed to obtain duckweed powder with a particle size range of 100 mesh to 400 mesh.

浮萍粉末的制作方法，采集新鲜浮萍，浮萍分离与清洗，将采集到的浮萍放入清水中浸泡2-4h，去除表面的杂质，使用过滤器将浮萍与水分离，保留浮萍本身，将分离的浮萍放入烘干设备，温度控制在65-90°C之间，将干燥的浮萍进行粉碎，得到浮萍粉末，粒径范围为100目至400目。

[n0034]

Example 1

实施例一

[n0035]

A high-protein duckweed feed comprises carbohydrates, fats, minerals, vitamins, and additives. The carbohydrates account for 75% of the total weight, the fats account for 12%, the minerals and vitamins account for 8%, and the additives account for 5%. The raw materials for the carbohydrates include 100 parts duckweed powder, 30 parts soybean meal, 30 parts rapeseed meal, 30 parts cottonseed meal, 8 parts corn, 15 parts soybean leaves, 20 parts pea hulls, 8 parts fish meal, and 10 parts meat and bone meal.

一种高蛋白浮萍饲料，包括有碳水蛋白成分、脂肪成分、矿物质和维生素成分、添加剂成分，所述碳水蛋白成分占总重量的75%，所述脂肪成分占总重量的12%，所述矿物质和维生素成分占总重量的

8%，所述添加剂成分占总重量的5%，碳水蛋白成分的原料包括浮萍粉末100份、豆粕30份、菜籽粕30份、棉籽粕30份、玉米8份、黄豆叶15份、豌豆皮20份、鱼粉8份、肉骨粉10份。

The fat components include 6 parts soybean oil, 8 parts cottonseed oil, 4 parts chicken fat, 10 parts duck fat, and 6 parts cod liver oil; the mineral and vitamin components include 5 parts dicalcium phosphate, 2.5 parts sodium alginate, 2.5 parts thiamine, 3 parts riboflavin, 5 parts cyanocobalamin, and vitamin C. 3 parts; the additives include 4 parts Bifidobacterium, 6 parts yeast, 4 parts cellulase, 4 parts protease, 0.8 parts butylated hydroxybenzene, 0.8 parts calcium propionate, and 2 parts meat flavoring. The process includes the following steps: accurately weigh each ingredient according to the proportions in the formula and place them separately in appropriate containers; mix duckweed powder with soybean meal, rapeseed meal, cottonseed meal, corn, soybean leaves, pea hulls, fish meal, and meat and bone meal, and stir evenly; mix soybean oil, cottonseed oil, chicken fat, duck fat, and cod liver oil together, then add this mixture to the above steps, stir evenly, and then perform ultrasonic vibration for 4 hours at a temperature of 78°C; finally, mix dicalcium phosphate, sodium alginate, thiamine, riboflavin, cyanocobalamin, and vitamin C together, stir evenly, add this mixture, and stir thoroughly for 1 hour at a temperature of [missing information]. The temperature is controlled at 45°C, and the stirring speed is controlled at 240r/min. Finally, Bifidobacterium, yeast, cellulase, protease, butylated hydroxybenzene, calcium propionate, and meat flavoring are added to the materials from the above steps and then centrifuged and stirred at 82°C for 1 hour, followed by standing for 20 minutes. The final mixture is then extruded or granulated to form granules or blocks suitable for feeding and dried to remove

excess moisture. The process is now complete. For the preparation of duckweed powder, fresh duckweed is collected, separated, and washed. The collected duckweed is soaked in clean water for 4 hours to remove surface impurities. The duckweed is separated from the water using a filter, retaining the duckweed itself. The separated duckweed is placed in a drying device at a temperature controlled at 90°C, and the dried duckweed is pulverized to obtain duckweed powder with a particle size range of 1400 mesh.

脂肪成分包括有，大豆油6份、棉籽油8份、鸡脂4份、鸭脂10份、鱼肝油6份；矿物质和维生素成分包括有磷酸氢钙5份、海藻酸钠2.5份，硫胺素2.5份，核黄素3份、氰钴胺5份、维生素C 3份；添加剂成分包括有，双歧杆菌4份，酵母菌6份，纤维酶4份，蛋白酶4份，丁基羟基苯0.8份，丙酸钙0.8份，肉类香精2份，包括以下步骤，按照配方中的比例准确称量各种原料，并将它们分别放入适当的容器中，将浮萍粉末与豆粕、菜籽粕、棉籽粕、玉米、黄豆叶、豌豆皮、鱼粉和肉骨粉混合在一起，搅拌均匀；将上述将大豆油、棉籽油、鸡脂、鸭脂和鱼肝油混合在一起，然后加入至上述步骤中，搅拌均匀，然后进行超声震荡，震荡时间控制在4h，温度控制在78°C；再将磷酸氢钙、海藻酸钠、硫胺素、核黄素、氰钴胺、维生素C混合在一起，搅拌均匀加入，进行充分的搅拌混合均匀，搅拌控制时间在1h，搅拌温度控制在45°C，搅拌转速控制在240r/min；最后将双歧杆菌、酵母菌、纤维酶、蛋白酶、丁基羟基苯、丙酸钙和肉类香精倒入上述步骤的材料在一起，然后进行离心搅拌处理，温度控制在82°C，搅拌控制1h，然后静置20min；将最终混合物通过挤压或造粒的方式制成适合饲喂的颗粒状或块状饲料，并进行干燥处理，以去除多余的水分即完成加工，浮萍粉末的制作方法，采集新鲜浮萍，浮萍分离与清洗，将采集到的浮萍放入清水中浸泡4h，去除表面的杂质，使用过滤器将浮

萍与水分离，保留浮萍本身，将分离的浮萍放入烘干设备，温度控制在90°C之间，将干燥的浮萍进行粉碎，得到浮萍粉末，粒径范围为1400目。

[n0036]

Example 2

实施例二

[n0037]

A high-protein duckweed feed comprises carbohydrates, fats, minerals, vitamins, and additives. The carbohydrates account for 65% of the total weight, the fats account for 12%, the minerals and vitamins account for 8%, and the additives account for 15%. The raw materials for the carbohydrates include 60 parts duckweed powder, 5 parts soybean meal, 8 parts rapeseed meal, 12 parts cottonseed meal, 4 parts corn, 6 parts soybean leaves, 10 parts pea hulls, 2 parts fish meal, and 6 parts meat and bone meal.

一种高蛋白浮萍饲料，包括有碳水蛋白成分、脂肪成分、矿物质和维生素成分、添加剂成分，所述碳水蛋白成分占总重量的65%，所述脂肪成分占总重量的12%，所述矿物质和维生素成分占总重量的8%，所述添加剂成分占总重量的15%，碳水蛋白成分的原料包括浮萍粉末60份、豆粕5份、菜籽粕8份、棉籽粕12份、玉米4份、黄豆叶6份、豌豆皮10份、鱼粉2份、肉骨粉6份。

The fat components include 2 parts soybean oil, 3 parts cottonseed oil, 2 parts chicken fat, 2 parts duck fat, and 1 part cod liver oil; the mineral and vitamin components include 3 parts dicalcium phosphate, 1 part sodium alginate, 1.5 parts thiamine, 1.6 parts riboflavin, 2 parts cyanocobalamin, and 1 part vitamin C; the additive components include 2.5 parts bifidobacteria, 2 parts yeast, 1 part cellulase, 2 parts protease, 0.2 parts butylated hydroxybenzene, 0.4 parts calcium propionate, and 1 part meat flavoring. The process includes the following steps, following the formula... Accurately weigh all raw materials according to the specified proportions and place them separately in appropriate containers. Mix duckweed powder with soybean meal, rapeseed meal, cottonseed meal, corn, soybean leaves, pea husks, fish meal, and meat and bone meal, and stir evenly. Mix soybean oil, cottonseed oil, chicken fat, duck fat, and cod liver oil together, then add them to the mixture from the previous step, stir evenly, and then perform ultrasonic vibration for 2 hours at a temperature of 65°C. S3. Add dicalcium phosphate, sodium alginate, thiamine, riboflavin, ... Cyanocobalamin and Vitamin C are mixed together and stirred evenly. The mixture is stirred thoroughly for 1 hour at a temperature of 45°C and a speed of 120 rpm. Bifidobacterium, yeast, cellulase, protease, butylated hydroxybenzene, calcium propionate, and meat flavoring are then added to the mixture. The mixture is then centrifuged at 48°C for 1 hour and allowed to stand for 20 minutes. The final mixture is then extruded or granulated to form suitable pellets or blocks for feeding. It is then dried to remove excess moisture. For the preparation of duckweed powder, fresh duckweed is collected, separated, and washed. The collected duckweed is soaked in clean water for 2 hours to remove surface impurities. A filter is used to

separate the duckweed from the water, retaining the duckweed itself. The separated duckweed is placed in a drying device at a temperature of 65°C and pulverized to obtain duckweed powder with a particle size range of 100 mesh.

脂肪成分包括有，大豆油2份、棉籽油3份、鸡脂2份、鸭脂2份、鱼肝油1份；矿物质和维生素成分包括有磷酸氢钙3份、海藻酸钠1份，硫胺素1.5份，核黄素1.6份、氰钴胺2份、维生素C1份；添加剂成分包括有，双歧杆菌2.5份，酵母菌2份，纤维酶1份，蛋白酶2份，丁基羟基苯0.2份，丙酸钙0.4份，肉类香精1份，包括以下步骤，按照配方中的比例准确称量各种原料，并将它们分别放入适当的容器中，将浮萍粉末与豆粕、菜籽粕、棉籽粕、玉米、黄豆叶、豌豆皮、鱼粉和肉骨粉混合在一起，搅拌均匀；将上述将大豆油、棉籽油、鸡脂、鸭脂和鱼肝油混合在一起，然后加入至上述步骤中，搅拌均匀，然后进行超声震荡，震荡时间控制在2h，温度控制在65℃；S3、再将磷酸氢钙、海藻酸钠、硫胺素、核黄素、氰钴胺、维生素C混合在一起，搅拌均匀加入，进行充分的搅拌混合均匀，搅拌控制时间在1h，搅拌温度控制在45℃，搅拌转速控制在120r/min；最后将双歧杆菌、酵母菌、纤维酶、蛋白酶、丁基羟基苯、丙酸钙和肉类香精倒入上述步骤的材料在一起，然后进行离心搅拌处理，温度控制在48℃，搅拌控制1h，然后静置20min；将最终混合物通过挤压或造粒的方式制成适合饲喂的颗粒状或块状饲料，并进行干燥处理，以去除多余的水分即完成加工，浮萍粉末的制作方法，采集新鲜浮萍，浮萍分离与清洗，将采集到的浮萍放入清水中浸泡2h，去除表面的杂质，使用过滤器将浮萍与水分离，保留浮萍本身，将分离的浮萍放入烘干设备，温度控制在65℃之间，将干燥的浮萍进行粉碎，得到浮萍粉末，粒径范围为100目。

[n0038]

The foregoing has shown and described the basic principles, main features, and advantages of the present invention. It will be apparent to those skilled in the art that the present invention is not limited to the details of the above exemplary embodiments, and that the present invention can be implemented in other specific forms without departing from the spirit or basic characteristics of the present invention.

以上显示和描述了本发明的基本原理和主要特征和本发明的优点,对于本领域技术人员而言，显然本发明不限于上述示范性实施例的细节，而且在不背离本发明的精神或基本特征的情况下，能够以其他的具体形式实现本发明。

Therefore, the embodiments should be regarded as exemplary and non-limiting in all respects, and the scope of the invention is defined by the appended claims rather than the foregoing description. Thus, it is intended that all variations falling within the meaning and scope of the equivalents of the claims be included within the invention.

因此，无论从哪一点来看，均应将实施例看作是示范性的，而且是非限制性的，本发明的范围由所附权利要求而不是上述说明限定，因此旨在将落在权利要求的等同要件的含义和范围内的所有变化囊括在本发明内。

[n0039]

Furthermore, it should be understood that although this specification describes embodiments, not every embodiment contains only one independent technical solution. This narrative style is merely for clarity. Those skilled in the art should consider the specification as a whole, and the technical solutions in each embodiment can also be appropriately combined to form other embodiments that can be understood by those skilled in the art.

此外，应当理解，虽然本说明书按照实施方式加以描述，但并非每个实施方式仅包含一个独立的技术方案，说明书的这种叙述方式仅仅是为清楚起见，本领域技术人员应当将说明书作为一个整体，各实施例中的技术方案也可以经适当组合，形成本领域技术人员可以理解的其他实施方式。