

CLAIMS

1. Onsite production or supply as Manufactured product of the composition(s) to the Aquaculture industry distribution chain comprising of:

- Bacteria that could be New Species,
- Bacteria that could be a variant of the known species,
- Bacteria that are known species belonging to a range of genera,
- Bacteria that are known species and belong to the following representative genus:
Alteromonas, Arthrobacter, Bacillus, Brevibacterium, Hydrogenophaga, Lactobacillus, Leuconostoc, Pediococcus, Phyllobacterium, Pseudoalteromonas, Pseudomonas, Streptomyces, Shewanella.
- Bacteria belonging to the representative species:

Pseudoalteromonas arabiensis, Pseudoalteromonas luteoviolacea, Pseudoalteromonas rubra, Pseudoalteromonas sp., Bacillus amyloliquefaciens, Bacillus firmus, Bacillus flexus, Bacillus lentus, Bacillus pumilus, Bacillus polymyxa, Bacillus megatarium, Bacillus alvei, Bacillus subtilis, Bacillus siamensis, Bacillus sonorensis, Bacillus vallismortis, Bacillus velezensis, Bacillus paralicheniformis, Bacillus vireti, Brevibacterium aureum, Brevibacterium fuscum, Brevibacterium sp., Hydrogenophaga intermedia, Lactobacillus sakei, Lactobacillus rogosae, Lactobacillus plantarum, Lactobacillus pentosus, Lactobacillus paracasei, Lactobacillus panis, Lactobacillus pontis, Lactobacillus reuteri, Lactobacillus frumenti, Lactobacillus sanfranciscensis, Lactobacillus casei, Lactobacillus coryniformis, Lactobacillus mellis, Lactobacillus brevis, Lactobacillus buchneri, Lactobacillus bulgaricus, Lactobacillus curvatus, Lactobacillus farciminis, Lactobacillus fermentum, Lactobacillus helveticus, Lactobacillus lactis, Lactobacillus reuteri, Lactobacillus johnsonii, Leuconostoc citreum, Leuconostoc pseudomesenteroides, Leuconostoc lithii, Pediococcus acidilactici, Pediococcus damnosus, Pediococcus pentosaceus, Pediococcus cerevisiae, Pediococcus argentinus, Pediococcus cellicola, Pediococcus clausenii, Pediococcus ethanolidurans, Pediococcus inopinatus, Pediococcus parvulus, Pediococcus pentosaceus, Pediococcus siamensis, Pediococcus stilesii, Phyllobacterium brassicacearum, Phyllobacterium ifriqiense, Phyllobacterium sophorae, Phyllobacterium catacumbae, Phyllobacterium endophyticum, Phyllobacterium ifriqiense,

Phyllobacterium leguminum, *Phyllobacterium loti*, *Phyllobacterium myrsinacearum*,
Phyllobacterium phragmitis, *Phyllobacterium rubiacearum*, *Phyllobacterium salinisoli*,
Phyllobacterium sophorae, *Phyllobacterium trifolii*, *Phyllobacterium zundukense*,
Pseudoalteromonas arabiensis, *Pseudoalteromonas luteoviolacea*, *Pseudoalteromonas rubra*,
Pseudomonas alkylphenolica, *Pseudomonas alcaliphila*, *Pseudomonas bauzanensis*,
Pseudomonas clemancea, *Pseudomonas chlororaphis*, *Pseudomonas carboxydohydrogena*,
Pseudomonas glycinae, *Pseudomonas koreensis*, *Pseudomonas kilonensis*, *Pseudomonas indica*,
Pseudomonas lini, *Pseudomonas rhizosphaerae*, *Pseudomonas pachastrellae*, *Pseudomonas*
grimontii, *Pseudomonas graminis*, *Shewanella sediminis*,
Streptomyces violaceoruber, *Streptomyces ansochromogenes*, *Streptomyces aureofaciens*,
Streptomyces noursei, *Streptomyces rimosus*, *Streptomyces* sp. S073, *Arthrobacter* species known
to produce therapeutic biomolecules and used based on the fish health condition and fish type.

- Growth medium could be simple, complex, selective or customized,
 - The dehydrated Growth medium added after incubating the bacteria could be the same medium used for the cultivation of bacteria or a different Growth medium,
 - The dehydrated Growth medium added could be proportional to the amount specified for a given volume, as given in the instructions by the manufacturer of the media or could be customized,
 - There could be variations to this basic rule in the method of preparation depending on where it is being used, bacterial proportions and density, fish taxonomy, water quality, fish density,
 - Variations in the composition(s) and their proportions in permutations and combinations and along with the system(s) and method(s) renders the various benefits characteristic of the composition(s).
2. The composition as recited in Claim 1, wherein the incubation time depends on the bacteria, growth medium used, preference for the growth medium studied using growth patterns and inoculum density. Generally, a minimum incubation of 48 hours is preferred and the growth conditions dependent on the bacteria used in the composition(s).

3. The composition as recited in Claim 1, wherein the shelf life of the composition(s) depends on the bacteria, growth medium used in preparation of the composition(s) and the best to use time could range from a month to six months from the date of manufacturing.
4. The composition as recited in Claim 1, wherein the bacteria could be a probiotic bacteria.
5. The distribution chain as recited in Claim 1 comprises of the farms, ponds, aquariums, transportation bags, retail outlets, end users.
6. The composition of Claim 1, wherein the composition(s) could be fine tuned for a specific fish type. The composition of Claim 1, wherein the composition(s) could be highly specific for a fish type or fish taxonomy.
7. The composition(s) as recited in Claim 1, the method(s) and system(s) for aquaculture industry distribution chain characterized by:

Addressing the stress and starvation of fishes throughout the distribution chain,

Enabling close to 0% mortalities of fishes throughout the distribution chains; at farms, at aquariums, during transportations (Death On Arrival - DOA, Death After Arrival - DAA, Death After 7 Days Of Arrival – DA7), retail outlets and end users,

Pre-treatment of fishes to achieve close to 0% mortalities of fishes throughout the distribution chains; at farms, at aquariums, during transportations (Death On Arrival - DOA, Death After Arrival - DAA, Death After 7 Days Of Arrival – DA7), retail outlets and end users,

Improving the health parameters of the fishes,

Serving as a probiotic,

Serving as a prebiotic,

Serving to improve water quality by reducing high levels of nitrates, nitrites and ammonia close to 0 ppm and maintaining at that level,

Promotor of reproduction,

Disease control,

Improvement of digestion,

Improvement in immune system,

Source of nutrients and growth promotor,

Improvement in color,

More compatible with other fishes,

Usage of water lesser than the currently prescribed amount and replacing water with lesser frequency,

Enabling immediate acclimatization to the new environment the fishes are introduced,

8. The composition as recited in Claim 1, wherein the composition(s) could comprise of one type of species of bacteria or a combination of them, which could be New species, variants, known species.
9. The composition as recited in Claim 1, wherein the composition(s) comprise of growth media which are chemically defined or customized.
10. The composition as recited in Claim 1, wherein the composition(s) comprise of known nutritive components that could serve as a prebiotic or customized.
11. The composition as recited in Claim 1, wherein the growth media could also serve as the prebiotic nutritive components.
12. The composition as recited in Claim 1 wherein the growth media used is proportional to the amount to be used for a given volume, as given in the instructions by the manufacturer of the media or customized.
13. The method of Claim 7, wherein the method is environment specific and also depends on the fish type, the quality of water, density of fishes, fish feed patterns.

14. The method of Claim 14 wherein the method for farms, ponds, aquariums, transportation bags could be pretreatment of fishes and introducing the composition(s) directly into the ponds, farms, aquariums, tanks, transportation bags.
15. A method of Claim 7, wherein the method comprises of taking aliquots of the bacterial suspension incubated for a minimum of (24 - 48) hours, adding the dehydrated growth medium and mixing for about 1- 5 minutes and then introducing into tanks, aquariums, farms, ponds, transportation bags; volume of (1-5) ml of the composition(s) use for one liter of water
16. A method of Claim 7 wherein the composition(s) could be injected into the fishes.
17. The system for method recited in Claim 15 wherein the system to get down water parameters - nitrates, nitrites and ammonia close to 0 ppm and maintain at that level could be a porous containers of different shape and size with material having high salt content.
18. The system of Claim 16, wherein the material used in the porous containers could be lava rocks.
19. The system for method recited in Claim 15 wherein the system to get down water parameters - nitrates, nitrites and ammonia close to 0 ppm and maintain at that level is to introduce the composition(s) into the Recirculatory Aquaculture Systems (RAS).
20. The onsite installation of the composition(s) as recited in Claim 1 requires customized solutions catering to the specific needs of the farms, ponds, aquariums, or companies into transportation of live stock - Ornamental fishes.
21. The manufacturing of the composition(s) as recited in Claim 1 requires customized solutions including packaging in containers and / or using recyclable materials for packaging.