ICAR-CIFA, Bhubaneswar commercialised farmer friendly diagnostic kits for bacterial diseases of fishes

India is the second largest country in the world to produce fish from aquaculture. It contributes about 6.3% in global aquaculture. During the year 2015- 2016, the country has produced about Indian Rupees 1.0 lakh crore value fish for local consumption and export. This resulted in an unparalleled average annual growth rate of over 4.5% over the years which have placed the country on the forefront of global fish production. Further, the country has plans to increase the fish production and productivity by 8 per cent annual growth rate and to reach 15 million tonnes mark by 2020.

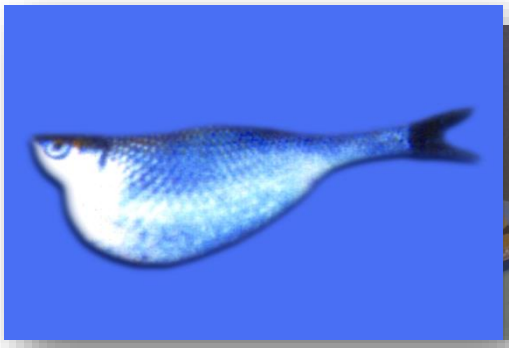
Disease is one of the major constrains to aquaculture and limiting factor for economic and socio-economic development in India and as in many other countries of the world. Some diseases have caused serious damage, not only the livelihood of fish farmers, but also, to the future development of the industry. The vertical expansion of fish culture with diversified species and higher stocking density has resulted more frequent occurrence of bacterial, parasitic and viral pathogens, often leading to higher morbidity or mass mortalities and lowered production. Bacterial fish diseases are very common and are one of the most difficult health problems to deal with. Indian aquaculture faces 20-30% loss due to diseases, among which 50-60% is caused by the bacterial pathogens. The major bacterial diseases include ulcers, red diseases, septicaemia and gill diseases caused mostly by *Aeromonas*, *Edwardsiella*, *Vibro*, *Pseudomonas* and *Flavobacterium* sp. Development and application of suitable diagnostic and control measures to combat disease occurrence in fish and shellfish culture to control production loss, thus have assumed significance in many aquaculture-producing countries.

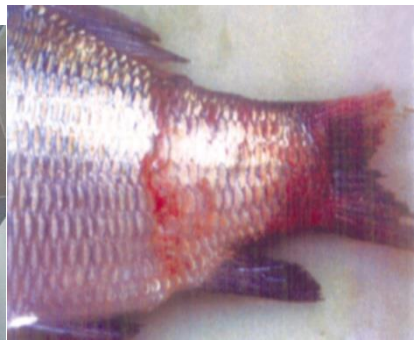
Bacterial diseases such as aeromoniasis or red disease, edwardsellosis, bacterial gill disease, columnaris disease and vibriosis being reported in all stages of IMCs farming in Indian situation. One of the major bacterial disease viz., Aeromoniasis or red disease encountered or reported throughout the season or culture durations of carp farming. Other bacterial diseases like edwardsellosis and bacterial gill disease are mainly noticed during winter and columnaris, vibriosis are encountered mostly during summer and rainy season. These diseases are mostly manifested as ulcers, red diseases, septicaemia, fin rot and tail rot, dropsy and gill diseases.

Diagnostic Kits for Fish Disease Diagnosis

Spot Agglutination Kit




Spot agglutination kit is for on farm diagnosis of ulcers, red diseases, septicemia and gill diseases caused by *Aeromonas, Edwardsiella, Vibrio, Pseudomonas* and *Flavobacterium* sp

Packaging of Kit: The kit is provided with different bacterial antigens and respective positive control serum.

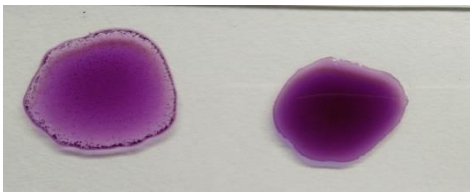
Storage condition: It may be stored in ordinary refrigerator (4-8°C) up to six month and one month in room temperature. Never store the kit in deep freezer. The test is done in ordinary room temperature without sophistication.

Advantages:

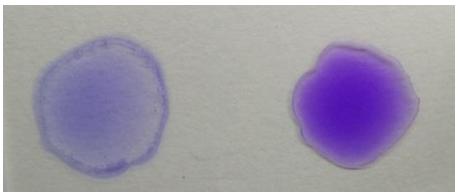
- Fast method for fish disease detection/health certification
- Suitable to be carried for farm level diagnosis.
- 30-40 fish serum samples can be tested within an hour
- Easy to be used by common fish farmers
- Needs no sophistication

Test Procedure:

1. Shake the reagents thoroughly before use
2. Put a drop of serum collected from fish along with a drop of positive serum provided in the kit (Sample-1) separately on glass slide
3. Add one drop of antigens (Sample-2) separately to each drop of serum and mix smoothly for 1-2 min.
4. The positive reaction is seen in naked eye as formation of clumps in the periphery of the test as a coloured ring (as shown below)



Positive Negative

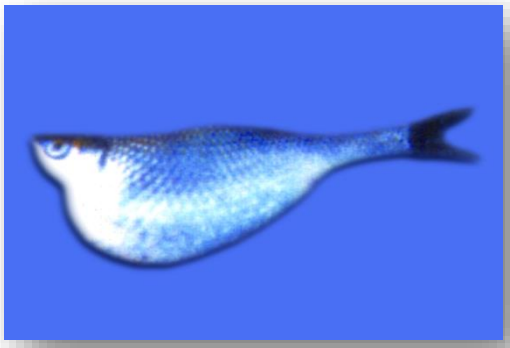


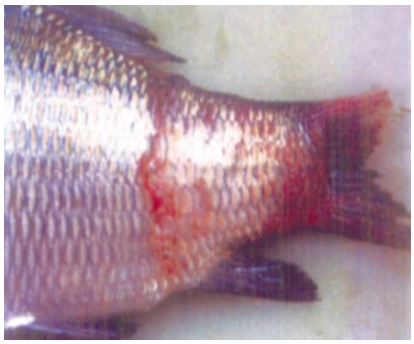
Positive Negative

Diagnostic Kits for Fish Disease Diagnosis

Dot-ELISA Kit




Dot-ELISA kit is for on farm diagnosis of ulcers, red diseases, septicemia and gill diseases caused by *Aeromonas, Edwardsiella, Vibrio, Pseudomonas* and *Flavobacterium* sp

Packaging of Kit: The kit is provided with different bacterial soluble antigens, positive and negative serum raised in rabbit, Anti-rabbit globulin-HRPO conjugate, dip strips containing a white paper on one side, different solutions and buffers and, etc.

Storage condition: It may be stored in ordinary refrigerator (4-8°C) up to three month and one year in deep freezer (-20^0 C). Never keep the kit in room temperature for more than 12 hrs. The test is done in ordinary room temperature condition.

Advantages:

- Accurate and sensitive method for fish disease detection
- Detect bacterial pathogens in fish tissues (fish kidney)collected upto 1-2 days after death
- Suitable to be carried for farm level diagnosis if refrigerator is available.
- 30-40 fish serum samples can be tested within a day

Test Procedure:

1. Take out from refrigerator, allow the reagents to thaw and shake the reagents thoroughly before use
2. Take two dip strips and hold it without touching the white paper part. One strip is for sample and other as control
3. Take the sample strip and touch its white paper to the fish samples (tissues, body fluids, gill , kidney)
4. Allow the strip to dry for 5-10 min.
5. Dip both the strips into solution-1 for 5 min.
6. Then dip the strip in washing buffer (solution-X) for I min.
7. Dip the strip into solution-2 for 30 min.
8. Then dip again in solution-X for 1 min.
9. Dip the strip in solution-3 for 30 min
10. Then dip again in solution-X for 1 min.
11. Dip the strip in solution-4 for 10 min or till the development of colour
12. Then see the change of colour of the paper and compare it with the control (as shown below)
13. The strips can be dried and stored for future reference/record

Manufactured and Marketed by

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