***Lactobacillus*- Potential Probiotic-an overview**

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***Abstract:* Lactic acid bacteria belong to a wide range of genera with considerable number of species. They are gram positive, non- spore forming facultative anaerobic organisms. The environmentally friend aquaculture has been research into alternative disease prevention methods. This literature review provides infermation on the *Lactobacillus* sp are used as a probionts in Aquaculture area.**

***Keywords:* Probiotic, *Lactobacillus* sp, Aquaculture, Biotope, Immunity.**

**1. INTRODUCTION**

Lactobacilli are Gram-positive, non-spore formingand catalase negative rods that ferment various carbohydrates mainly to lactate and acetate. Various amino acids, vitamins and minerals are essential for their growth (Kandler and Weiss, 1986). Kvasnikov *et al,.* (1977) described lactobacilli and other lactic acid-producing bacteria from the intestines of various fish species at larval, fry and fingerling stages in habiting ponds in Ukrania, giving information on the changes in their composition as a function of the season of the year and life-stage of the fish.

The demand for environmental friendly aquaculture has been research in to alternative disease prevention methods such as use of non-pathogenic bacteria called probiotics (Kesarcodi- watson *et al* 2008). A number of probiotic bacteria belonging to the lactic acid bacteria *Lactobacillus, vibrio, Bacillus* and pseudomonas genera’s have been proposed. Fermentation (or bioprocessing) has been used to produce awide range of foods and food ingredients ever since theearliest recorded food preservation by humans. Many beneficialmicroorganisms (molds, yeast and lactic acid bacteria)are widely used to convert raw food substrates into aplethora of fermented products.

Bacteria of the genus *Lactobacillus* are beneficial microorganisms of particular interest because of their long history of use (Holzapfel,2002). Lactobacilli were among the first organisms used by man for processing foodstuffs (Konigs *et al*., 2000) and for preserving food by inhibiting invasion by other microorganisms that cause foodborne illness or food spoilage (Adams, 1999). The genus *Lactobacillus* is essential to modern food and feed technologies, not least because of increasing interest in beneficial effects (functional properties).

The concept probiotics has been redefined over time. Fuller (1989) defined it as a live microbial food which beneficially affects the host animal by improving intestinal microbial balance (Fuller 1989). The probiotic products traditionally incorporate intestinal species of *Lactobacillus* because of their long history of safe use in the dairy industry and their natural presence in the human intestinal tract which is known to contain a myriad of microbes, collectively called the microbiota.

Lactobacilli were important for human health, *longevity* and promoteal yogurt and other fermented foods as healthy. Food derived from plants, animals, orther products often contain main types of microbes. Biopreservation can be explained as the link between fermentaion and improvement of the safety of food using microorganisms and their metabolites (Kan &Frazier 1966; Klaenhammer 1988; Holzapfel *et al.,*1995).

The genus *Lactobacillius* are non-sporeforming catalase negative (even of some strains are able to produce Pseudocatalse), obligate saccharolytic rod or Coccobacilli generally characterized by a low GC (Guanine and Cytosine) content of the genome although the upper limit of GC content reaches 59.2 mol %(Cai *et al.,* 2012). Due to the threat related with the application of antibiotics the improvement of a non- antibiotic ecofriendly agent is being considerd as the most singnificant factors for proper health maintenance in aquaculture. Therefore, many aquaculturits have proposed a number of alternative appproaches in order to build up environmrntal friendly aquaculture one of them is use of probiotics as bio-control agents in place of the use of chemotherapeutics in aquaculture (Gatesoupe 2005; Robertson *et al.,* 2000).

In a study the lactic acid bacteria from *Cyprinus carpio* collected from the Thajin river in Thailand were described reporting the presence of *Enterococcus* spp and the dominane of *Lactococcus* garviae, an emerging zoonotic pathogen that has been isolated from cattle, fish and humans (Cai *et al.,*1999). Lactic acid bacteria belong to a wide range of genera with considerable number of species. They are gram positive, non spore forming facultaive anaerobic organisms. The genera of lactic acid bacteria are *Lactobacillus, pediococcus, Lactococcus, Leuconoston*etc., the genus *Lactobacillus* is the largest group among Lactobacteriaceae, Containing over 110 species (Dellaglio *et al,* 2005; Satokari *et al* 2002).

Strains most widely used as probiotics belong to genera *Lactobacillus, Streptococcus, Bifidobacterium* and yeasts (Salinitro *et al.,* 1997) in particular Lactic Acid Bacteia (Lab), including the genus *Lactobacillus* arethe most widely used. The aim of this paper was to review some published articles on the use of*Lactobacillus*as potential probioti.

**2. CHARACTERIZATION OF LACTIC ACID BACTERIA**

**Isolation**

Three factors of prime importance when isolating lactic acid bacteria from fish are thenutrient medium the incubation temperature and incubation time. In most invetgations trypticase soy agar (TSA), Marine- medium or brain- heart in fusion agar (BHIA) have been used for recovery of Lactic acid bacteria from in testtins and internal organs such as kidey, liver, spleen, etc. Aantibiotics have been widely used for growth parameters in swine (Thacker 2003). The first step in the isolation of probiotic bacteria is to maintain the sample in adequate conditions before inoubafion selective media. The samples should be homogenised quickly and diluted and cultured in selective media Several media have been devised for the elective or selective isolation of bifidobacteria and lactobacilli (Hartemink & Rombouts1999; Amann *et al.,* 1995).

**Identification**

Historically phenotypic methods have been used to indentify bacteria. The taxonomy for may decades heavily relied on the type of sugar farmentation and the fermentation products generated. The 16S to 23S intergenic spacer region exhibits a great deal of sequence and length variation (Leblond *et al.,*1996). The variation in this region has been used for differentiating species of prokaryotes. Undoubtedly the analysis of the bacterial genome is the most useful tool to identify and characterize (Fener *etal.,*2012). They are also usually non-motile and do not reduce nitrate. Lactic acid bacteria include members of the genera *Streptococcus, Enterococcus, Lactobacillus, Aerococcus, Carmobacterium, Leuconstoc, Lactococcus and Pediococcus.*

**Streptococcus**

*Streptococcus pyogen* is an important gram positive pathogens that cause various diseases in human ranging from mild (Chhatwal 2002). The first well documented study of streptoccus asociated with the mucosa of the gastrointestinal tract of fish (salmonids) has been reported by Trust and Sparrow (1974).

**Leuconostoc**

Ringo and Strom (1994) isolated the bacteria from the feces where it contributed for approximately 4.5% of the total microbiota when the char were fed a capelin roe diaet. Stratins belonging to the genus *Leuconostoc*  are Grampostivie lactic acid bacteria (LAB) of Economic importance relatd to numerous postive aspects.

* Fermentation of food stuffs (sauerkraut, pickles etc.).
* Potential roles in functional foods.
* Production of flavour compounds in multiple dariy products.

**Biotope**

Lactobacilli are ubiquitous, being found wherever substances rich in carbohydrates are available. Distributions of *Lactobacilli* in the gastrointestinal tract of humans, pigs, chickens, cattle, dogs, mice, rats and hamsters have been compared (Mitsuoka, 1992). The following lactobacilli have been found in these animal hosts*Lactobacillus acidophilus, L.murinus,L.intestinalis, L.salivarius, L.agilis, L.ruminis, L.vitulinus, L.hamsteri, L.aviaries, L.casei, L.reuteri and L.brevis*. Lactobacilli are present in the diet and in man-made habitats such as sewage and fermenting or spoiling food. Their presence is therefore very closely entwined with the lives of animals and humans.

**Immunty of Lactobacilli**

Lactobacilli can elicit innate and adaptive immune response in the hostria. Recent research efforts have demonstrated that inflammation and immunity changes in general are critical to the development of nearly every comlex condition as well represented previously unsupected clinical entifies (Hahn *et al.,*2007; Blank and Gerswin 2008). The use of immunity as disease controllers and forbidden in many countries (Verstegen 2001) and a growing concern about. If is used in fish nutrion to improve growth, survriability, feed efficiency and also prevention of intesinal l and neutralize the antinutritional factors present in the feeds stuffs (Suzer *et al.,*2008). They are also applied to increase microbial monitoring growth and feed efficiency (Panigrahi *et al.,* 2005).

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