Aquaculture is an increasingly important source of animal protein (Lara-Flores et al., 2003). In recent years, there is a global awareness of obtaining increased food production through aquaculture conditions of coastal waters, estuaries and fresh waters which constitute one of the most valuable and vulnerable natural resources of a nation’s economy (Nammalwar Rajan, 2007).

In terms of cultivable species of fish the components are diverse to suit the varied ecological conditions of different water bodies and also meet the regional preferences. Being basically a carp country, both the indigenous and exotic carps, catla, Rohu, Mrigal, Silver carp, grass carp and common carp account for a great bulk of the production. Several other candidate species include *Labeo calbasu*, *L.gonia*, *L.fimbriates*, *L.brata*, *Puntius pulchellus*, *p.kolus*, *p.sarana*, *cirrhinus cirrhosa* and even the mirror carp fetch high price in the north eastern part of the country. These species can grow not only at a faster rate, but also to a larger size, and at the same time, they are resistance to disease (Chandy, 1989). In comparison to higher animals, fishes are more efficient transformers of dietary energy into tissue protein.

Immunomodulatory agents of plant and animal origin increase the immune responsiveness of body against pathogens by activating the nonspecific immune system (Kulkarni and Nilapawar, 2001). Bacterial diseases are responsible for heavy mortality in wild and cultured fish. The problems in the farms are usually tackled by preventing disease out breaks or by treating the actual disease with drugs or chemicals. The use of antimicrobial agents has increased significantly in aquaculture practices (Alderman and Michael, 1992). Decreased efficacy and resistance of pathogens to antibiotics has necessitated development of new alternatives (Smith et al., 1994). Application of the
traditional medicines in aquaculture to overcome the drawbacks in the usage of chemical therapeutics is relatively a new venture and the potential of the herbals with multi functional active principles are promising (Sambhu and Jayaprakash, 2001; Sivaram et al., 2004). *Asparagus racemosus* (Satawari) prevents leucopenia induced by cyclophosphamids (Thatte and Dahanukar 1986).

The diagnostic techniques applied in fish hematology are usually adopted methods developed in human hematology and many of them can be used to assist in providing evidence and possible identification of an abnormality or disease processes. For example, hemoglobin estimation, erythrocyte counts and haematocrit value have proved useful in the detection of anaemia, total leucocyte and differential leucocyte counts (Blaxhall and Daisley, 1973; Walencik and Witeska, 2007).

Growth promoters are non nutritive materials which are at very low level of incorporation in the feed enhances the efficiency of feed utilization. A number of growth promoters viz., hormones, antibiotics, herbal product etc have been tested on farmed fish for their growth which has yielded with potential and wide range of results (Nandeesha et al., 2000). Immunomodulators are materials, which modify body’s defense mechanism (Raphel and Kuttan, 2003). *Withania somnifera* exhibits the property of reducing lipid peroxidation and metabolism during the stress in higher vertebrates (Al – Qurawi et al., 2000). Western blotting (Dot – Blot assay) studied by Grubh (1998) confirmed the vitellogen in stimulating activity and yolk related protein increasing activity of *Withania somnifera* in *Artemia parthenogenetica*. Haematological indices such as haemoglobin, haematocrit and red blood cell count have been reported to indicate secondary responses of an organism to irritants.
Two new Glycowithanolides Sitoindoside ix and Sitoindoside x isolated from *Withania somnifera* produced significant anti stress activity in albino mice and rats augmented learning acquisition and memory retention in both young and old rats (Ghosal *et al.*, 1989). *Withania somnifera* is said to have free radical scavenger activity (anti oxidant activity) where it has increased super oxide dismutase and catalase activities of rat liver in an *in vivo* model (Panda and Kar, 1997).

Fish diseases create a menace to aquaculture farms. Fish bacteriosis was investigated by many authors in histological microbiological and taxonomical point of view (Toranzo *et al.*, 2005; Vulpe *et al.*, 2008). *Aeromonas hydrophila* has been reported to cause fin rot disease in hatchery reared *Cyprinus carpio* fingerlings under temperate climatic conditions of Kashmir valley (Hussain *et al.*, 2005). Clinical signs in lake white fish infected only with *Aeromonas* spp. included congestion and hemorrhaging in the fins and musculature, generalized pallor, congestion and hemorrhaging and multi focal necrotic foci within the liver, moderate to severe splenomegaly congestion and swelling of the kidneys, ascites within the peritoneal cavity and haemorrhagic enteritis (Thomas Loch and Faisal, 2010).

Clinical signs associated with *A.salmonicide* infection included extensive external hemorrhaging, exophthalmia, splenomegaly, splenic and renal congestion, fibrous adhesions of the spleen and liver and hemorrhagic enteritis (Thomas Loch and Faisal, 2010). *A. hydrophila* strains isolated from infected fish were entero toxigenic and may be responsible for outbreaks of diarrhoea if the fish are consumed without proper cooking (Zeaur Rahim *et al.*, 1984).

The acetone extract of four medicinal plants *Cynodon dactyton*, *Aegle marmelos*, *Withania somnifera* and *Zingiber officinale* inhibited growth of *Vibrio* spp.
and *Photobacterium damselae*. The extracts from *W. somnifera* showing maximum growth of inhibition (Immanuel et al., 2009). Micol et al. (2005) successfully controlled Salmonid Rhabdovirus, Viral haemorrhagic septicemia virus (VHSV) by the plant extract derived from olive tree leaf (*Olea europaea*) and its major compound, Oleuropein (Ole). Methanolic extracts of the herbs *A. indica, C. dactylon, P. kurooa, W. somnifera and Z. officinalis* has suppressed the infection of WSSV after the injection with the herbal extracts and WSSV- inoculated mixture (Yogeeswaran, 2007). The aqueous extract of *C. dactylon* showed strong antiviral activity in *P. monodon* (Balasubramanian et al., 2007). The *W. somnifera* plant extracts did not induce lysis on incubation with human erythrocytes, without causing any damage to the living cells, whereas the antibiotic chloramphenicol induce lysis on human erythrocytes (Owais et al., 2005). Oral administration of the aqueous extract of *W. somnifera*, reduces the *salmonella* infection in mice as revealed by increased survival rate as well as less bacterial load in various organs of the treated animals (Owais et al., 2005). Immunomodulatory agents of plant and animal origin increase the immune responsiveness of body against pathogens by activating the non specific immune system (Kulkarni and Nilapawar, 2001). The polysaccharides, derived from red algae have been used as immune stimulants in teleosts and shrimp. For example intraperitoneal injection of hot water extracts of *Gloiopeltis complanata, Hypnea charoides and Chondrus ocellatus* increased resistance of *Cyprinus carpio* against *Edwardsiella tarda* and *Seriola quinqueradiata* against streptococcus infection (Fujiki et al., 1992)

The aqueous and ethanolic mixed herbal extracts of *Azadirachta indica, Ocimum sanctum* and *Curcuma longa* can ward off the growth in vitro and enhanced
the innate immunity against *A. hydrophila* in gold fish (Harikrishnan *et al.*, 2009; Harikrishnan and Balasundaram, 2008).

In Australia, Shatavari (*Asparagus racemosus*) is more often used to treat gastrointestinal disorders and as an external wash for wounds. The healing qualities are useful to a wide array of ailments. It is quite effective for stomach ulcers, hyperacidity and diarrhea dry and irritated membranes in the upper respiratory tract are soothed by this herb making it useful in cases of bronchitis and chronic fever. It may help in regeneration of seminiferous tubule population and help in increase of spermatogenesis. It acts as a nutritive, tonic (Vinay Kumar *et al.*, 2010) Rege *et al.*, (1999) observed that shatavari enhances immune function, increases corticosteroid production and promotes cell regeneration. Winston (2004) studied that the root has been used long in Ayurveda, as a tonic remedy to promote fertility, and also used for coughs and gastric ulcers.