INTRODUCTION
Fish contributes significantly to the human food need, particularly in developing countries where the problems of under nutrition and malnutrition flourish. It is the cheapest and most digestible source of animal protein. It has been estimated that about 60 percent developing countries derive over 30 percent animal supply of proteins from fish. 

The nutritional attributes of fish are highly praised. It is loaded with weighty nutrients, such as high quality proteins, vitamins like vitamin D, vitamin A, vitamin B2, vitamin B6 and minerals. Various health benefits like cardio protection, lower risk of arthritis, atherosclerosis, asthma, immunity disorders, certain types of cancer along with improved pregnancy outcomes with fewer preterm and lower birth weight deliveries have been associated with fish intake (Mohan et al., 2016). Furthermore, the presence of omega-3-fatty acids, particularly Eicosapentanoic acid (EPA) and Docosahexanoic acid (DHA) have neuroprotective effects and prevent alzheimer’s disease. They are also fundamental for normal neural and visual development in foetus (Clemens and Pressman, 2007).

Though fish is profoundly nutritious, but it is a highly perishable food commodity. The intrinsic factors viz. presence of low connective tissue, high moisture, highly oxidizable poly-unsaturated fatty acids and high post mortem pH make it exceedingly vulnerable to various biochemical, physical and microbial forms of
deterioration. Further, the other factors like unhygienic handling, insufficient storage and transport facility, high temperature and humidity which cause enzymatic changes, rancidity and putrefaction also add to fish spoilage, thus rendering it inedible for human consumption and cause huge economic losses. Globally, these fish spoilage mechanisms contribute to about 1.3 billion tones of fish loss both from capture and culture sectors (FAO, 2014). Moreover, the consumption of such unwholesome fish and fishery products may cause many fish borne illness with costly health effects.

Hence, to minimize these deteriorative changes and to maintain the quality of fish and fish products for long periods, application of good preservation method becomes the need of hour. The preservation methods applied should be as such that besides extending shelf life produce minimum or no change in flavour, taste, odor, nutrition and the digestibility of fish. Various preservation methods employed worldwide include Low temperature storage, dip treatments of antioxidants antimicrobials, brining, salting etc.

Low temperature treatment like chilling, freezing extends the shelf life of fish and meat products by inactivating microbial growth and thereby reducing enzymatic and chemical deterioration but certain undesirable reactions viz. rancidity and product dehydration associated with lipids and proteins still occur, leading to inimical changes in nutritional and sensory properties which increase with the increase in storage period. Hence, various preservative methods like use of antioxidants and antimicrobials which are highly potent to control the rancidity and microbial growth should be applied so as to maintain the nutritional quality of fish for a longer period.

Antioxidants are the substances which counteract the deterioration of stored food products by inhibiting their oxidation. Ascorbic acid and citric acid are a good example of these antioxidants. Ascorbic acid and citric acid and their salts are widely known for their role as oxygen scavengers, chelators, acidulates in biological system and synergists of primary antioxidants, so that a profitable effect on fish minced fish (Stodolnik et al, 1992) and fish fillets (Badii and Howell, 2002; Aubourg et al, 2004) have been observed. They remove oxygen and block the formation of free radicals, stabilize hydroperoxides and thus slow down oxidation and rancidity development in fish meat (Mielnik et al, 2002). They also suppress the activating role of metal ions by chelating them through
bond formation between its carboxyl or hydroxyl groups and the metal ion. Moreover, they exhibit bactericidal role by acidifying the bacterial cell interior and thus, causing their death.

The muscle tissue of live fish is generally sterile, but bacteria thrive in the alimentary tract and on the skin, and from there they penetrate into the muscles through the blood vessels. This process is further favoured by structural changes in the tissue as a result of rigor mortis and autolysis producing various deteriorative products viz. ammonia, carbonyls, histamine, acetic acid, indole, skatole etc (Ababouch et al., 1991). Hence, antimicrobial preservatives with a wide spectrum of activity against food spoilage microorganisms which are among the safest, most efficient and versatile are used in the food industry today.

Sorbic acids and their potassium salts inhibit microbial growth by affecting permeases and metabolic energy transport systems starves microbes of essential amino acids viz. serine, histidine, arginine (Tuncan and Martin, 1985).

Moreover, during recent years, consumer’s eating habits and tastes are heading towards health consciousness. Further, the predominance of singles or both professionals in urban families and the hectic work schedules renders little or no time for long cooking processes. Hence, the preference for small nutritious value added ready to eat food rather than traditional large meals is increasing. By ‘value added’ we mean the product that has changed its nature in the form of convenience foods with enhanced flavour and shelf life at the time of sale. The inadequacy of cereal proteins in meeting the nutritional need for humans is well established and as such innovative value added ready to eat fish products like fish balls, fish cutlets, fish noodles with elevated nutritional value appear to have a great potential (Reddy et al., 2014).

Thus, keeping fish spoilage, preservation, consumer’s health and safety in mind, an assiduous effort has been undertaken towards the consummation of following objectives:

- Assessment of proximate, chemical and microbial quality of raw muscles of *Hypophthalmichthys molitrix* and *Wallago attu*.
• Enhancing shelf life of fish with the treatment of antioxidant (Citric acid and Ascorbic acid) and antimicrobial (Potassium sorbate) as preservative.

• Preparation of Ready to eat products with enhanced taste and shelf life by value addition of fish muscle.

• Sensory analysis of raw, antioxidant and antimicrobial treated and value added fish products to determine the duration of organoleptic acceptance.