

Bangladesh Agricultural University, Mymensingh

Department of Fisheries Biology and Genetics

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. FBG 221

Course Title: Fish Physiology

Credit: 3

Course objectives :

The course is designed to know the matching of anatomy of fish organs with appropriate physiology. The students are expected to learn physiology and regulating factors of different organs of fishes.

Course contents :

1. Temperature regulation: Classification of fish based on thermal regulation, low and high thermal effect, temperature regulation in homeotherms, fish as poikilotherms, endothermic fishes.
2. Physiology of digestion: Digestion mechanism of different classes of food, role of HCl, bile, enzymes and hormones, gastric evacuation, parameters to study efficiency of digestion, absorption of digested food.
3. Metabolism: Metabolism and its phases, classification of metabolic rate based on activity levels, factors controlling metabolism in fish.
4. Physiology of blood circulation: Mechanism of blood circulation, components of circulatory system, cardiovascular parameters and controlling factors.
5. Physiology of respiration: External and internal respiration, mechanism of gas transport and exchange, factors affecting O₂ and hemoglobin affinity, respiratory volume.
6. Physiology of excretion and osmoregulation: Excretory products in different groups of fishes, mechanism of excretion, osmoregulatory mechanisms in hagfish, lamprey, elasmobranches, marine and freshwater teleosts and migratory fishes
7. Reproductive physiology: Reproductive cycle, gonadal maturation environmental and hormonal interplay in controlling reproduction, hypothalamic-pituitary-gonadal axis in fishes, viviparity in fishes, reproductive behaviour.

Text books :

1. Evans, D. H. and J. B. Claiborne. 2006. The Physiology of Fishes, 3rd Edition CRC Press: Boca Ration, Florida. 616 pp.
2. Hoar, W. S. and D. J. Randall. 1969-1997 (eds.). Fish physiology. Academic Press Inc. 559 pp.
3. Hoar, W. S. 1983. General and Comparative Physiology. 3rd Edition. New Jersey Prentice-Hall Inc., Eaglewood Cliffs.

References :

1. Ayala, A. G., J. M. Penalver and E. C. Pozo. 2011. Recent Advances in Fish Reproductive Biology. Research Signpost. 200 pp.
2. Bond, C. E. 1996. Biology of Fishes. 2nd Edition. Sanders College Publishing. 750 pp.
3. Brown, M. E. 1957 (ed.). The Physiology of Fishes. Vol. I and II. Academic Press New York and London.
4. Moyle, P. B. and J. J. Cech, Jr. 2000. Fishes: An Introduction to Ichthyology, 4th Edition. Prentice Hall Inc. 744 pp.
5. Wootton, R. J. 2002. Reproductive Biology of Fishes. Iowa State Press. 368 pp.

Bangladesh Agricultural University, Mymensingh

Department of Fisheries Biology and Genetics

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. FBG 222

Course Title: Fish Physiology

Credit: 1.5

Students shall maintain a record of everything done in the practical and field sessions in a Practical Note Book to be signed and checked by teacher(s) concerned. Viva voce test will form an essential part of the Practical Examinations.

1. Test of pepsin enzyme in stomach.
2. Study of oxygen consumption rate under different metabolic levels.
3. Preparation of blood smear and study on different types of blood cells.
4. Counting of RBC and WBC by haemocytometer.
5. Histological study of fish gill.
6. Histological study of fish kidney.
7. Studies on ammonia excretion in fishes.
8. Study of the effects of salinity changes on different species of fish
9. Studies on developmental stages of fish gonads.

References :

1. Bond, C. E. 1996. Biology of Fishes. 2nd Edition. Sanders College Publishing. 750 pp.
2. Moyle, P. B. and J. J. Cech, Jr. 2000. Fishes: An Introduction to Ichthyology, 4th Edition. Prentice Hall Inc. 744 pp.
3. Schreck, C. B. and P. B. Moyle. 1990 (eds.). Methods for Fish Biology. American Fisheries Society Bethesda, Maryland, USA. 684 pp.

Bangladesh Agricultural University, Mymensingh

Department of Aquaculture

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. AQ 221

Course Title: Fish Parasitology

Credit: 3

Course objectives :

The students will be acquainted with the fish parasitic pathogens and the nature of disease caused by parasites and be able to take necessary measures against parasitic infestation for sustainable fish production.

Course contents :

1. Introduction to parasitology: Definition, scope, role of parasitology in fisheries and aquaculture.
2. Parasitic fauna of freshwater and marine fish and shellfish: Major groups of parasites and their characteristics, classification of protozoan, helminths, copepod and annelid parasites of fishes.
3. Symbiosis and Parasitism: Types of symbiotic relationship, concept and types of host- parasite relationship, host specificity, infestation and infection.
4. Ecology of fish parasites: Host-parasite-environment relationship, ecological factors- mode of life, age, migration of fish, environmental influence, types of water bodies, influence of human, aquaculture and introduction fish and their parasite fauna.
5. Life history: Life cycle of some protozoan, digenean, cestode, nematode acanthocephalan and crustacean parasites of fish and shell fish.
6. Common parasitic diseases: Protozoan parasitic diseases of fish, causative agents, symptoms and pathological signs, prevention and control measures, metazoan parasitic diseases of fish, causative agents, symptoms and pathological signs, prevention and control measures.
7. Host's reaction to parasites: Cell and tissue reaction, immunity of fishes against parasitic infestation, principles of immunization against protozoan and metazoan parasitic diseases in fish.
8. Physiological factors of parasitic diseases: Stress and susceptibility of fish parasitic diseases, stress mediated diseases, mechanism of infection into diseases.
9. Public health and fish consumption: Fish borne human parasitic diseases (zoonotic disease), control of aquatic vector and zoonotic diseases.

Text books :

1. Chandra, K. J. 2009. Fish Parasitology (2nd Edition). Published by Krishna Ray Choudhury. 34/A/2 Ram Babu Road, Mymensingh. Printer-Chaudhury Printing and Publication. 16 G.K.M.Saha Road, Chhoto Bazar, Mymensingh, Bangladesh. 183 pp.
2. Dogiel, V. A. 1962. General Parasitology. Oliver and Boyd, Edinburgh, U.K. 516 pp.
3. Woo, P. T. K. 1995 (ed.). Fish Diseases and Disorders. Vol. I. Protozoa and Metazoa infections. CAB, International Publishing. Oxon, U.K. 808 pp.

References :

1. Amlacher, E. 1970. Text Book of Fish Diseases. T.F.H. Publications, Inc. U.S.A.
2. Cheng, T. C. 1982. General Parasitology. Academic Press Inc. N.Y.
3. Davis, H. S. 1961. Culture and Diseases of Game Fishes. University of California Press, Berkeley and Los Angeles.
4. Kabata, Z. 1985. Parasites and Diseases of fish cultured in the tropics. Taylor and Francis, London.
5. Kenndy, C. R. 1975. Ecological Animal Parasitology. Blacwell Scientific Publications, Oxford, London, Edinburgh and Melbourne.
6. Roberts, R. J. 1989. Fish Pathology 2nd Edition. Baillere Tindal, London, U.K.
7. Schaperclaus, W. 1991. Fish Diseases. Vol. 1 & 2. Oxonian Press Pvt. Ltd. New Delhi, India.
8. Van Duijn, J. C. 1973. Diseases of Fishes. Butterworth & Co. Ltd. London.

Bangladesh Agricultural University, Mymensingh

Department of Aquaculture

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. AQ 222

Course Title: Fish Parasitology

Credit: 1.5

Students shall maintain a record of everything done in the practical and field sessions in a Practical Note Book to be signed and checked by teacher(s) concerned. Viva voce test will form an essential part of the Practical Examinations.

1. Study of museum specimens of fish parasites.
2. Calibration of the microscope for measurements.
3. Plan data accessation for examination of vertebrate host.
4. Technique of investigation of fish host for parasitological study.
5. Collection, fixation and preservation of parasites.
6. Permanent preservation of parasites-staining, dehydration, clearing and mounting.
7. Key out, identification and description of collected parasites.
8. Field trip to a fish farm and preparation of report on parasitological investigation.

References :

1. Bykhovskaya-Pavloskaya, I. E., S. V. Gussev, M.N. Dubinina, N. A. Izymova, T. S. Smiruova, I. L.Sokolovskaya, G. A.Shtein, S. S. Shul'man and V. M. Epshtein. 1964. Key to Parasites of Freshwater fishes of the U.S.S.R. Israel Programme for Scientific T
2. Cable, R. M. 1943. Illustrated Laboratory Manual of Parasitology. Burgess Publ. Co. Minneapolis, New York, San Francisco, London.ranslation, Jerusalem.
3. Chandra, K. J. 2008. A Practical Text book of Fish Parasitology and Health Management. Published by the Bangladesh University Grants Commission, Dhaka.
4. Tonguthai, K., S. Chinabut, T. Somsiri, P. Chandratchakool and S. Kanchanakhan. 1999. Diasnostic Proceddures for Fin fish Diseases. AAHRI, Department of Fisheries,
5. Yamaguti, S. 1958, 1959, 1961, 1962, 1963. Systema Helminthum. Vol. I-V. Interscience Publishers Inc.

Bangladesh Agricultural University, Mymensingh

Department of Agricultural Statistics

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. Stat 221

Course Title: Statistics

Credit: 3

Course objectives :

After completion of the course students of this faculty will be able to design their own experiments of MS research.

Course contents :

1. Definition of Statistics and scope of Statistics in Fisheries. Variables. Construction of frequency distribution and graphical representation of data. Measures of central tendency, dispersion, moments, skewness and kurtosis.
2. Simple and multiple correlation and regression. Fitting linear regression to observed data.
3. Elementary theory of probability. Probability distributions: Binomial, Poisson and Normal.
4. Population and sample. Basic idea on sampling techniques and determination of sample size. Preliminary idea on sampling distribution.
5. Test of hypothesis, type I and type II errors and level of significance. Idea on t-test, F-test, chi-square test. Testing hypothesis regarding population mean, equality of two means, population variance, equality of two population variances, independence of two attributes in contingency table, test of significance of correlation coefficient and regression coefficient(s).
6. Principles of experimental design. Field layout and analysis of variance in completely randomized design, randomized block design and latin square design. Multiple comparison test.
7. Concept and method of analysis of factorial experiments and split-plot design.
8. Concept and method of analysis of covariance.
9. Introduction to survival analysis: Censoring, survival rate and hazard rate.

Text books :

1. Ahmed, A. R., M. A. Bhuiya, Z. A. Reza, M. Z. Hossain. 2004. Methods of Statistics for Graduate and Postgraduate Students. S. Ahmed and Associates. 515 pp.
2. Gupta, S. C. and V. K. Kapoor. 2002. Fundamentals of Mathematical Statistics, 11th Edition. S.Chand and Company Ltd., New Delhi.
3. Mead, R., R. N. Curnow and A. M. Hasted. 1993. Statistical Methods in Agriculture and Experimental Biology. 2nd Edition. Chapman and Hall, London.

4. Steel, R. G. D. and J. H. Torrie. 1980. Principles and procedures of Statistics. McGraw–Hill Book Co. Inc. New York.
5. Cochran, W.G. 1977. Sampling Techniques. John Willey and Sons.

References :

1. Clarke, G. M. and D. Cooke. 1992. A Basic Course in Statistics. 3rd Edition. Edward Arnold, London.
2. Collett, D. 2003. Modelling Survival Data in Medical Research. Chapman & Hall.
3. Yule, G. U. and M. G. Kendall. 1965. An Introduction to the Theory of Statistics. Charles Griffin, Lond

Bangladesh Agricultural University, Mymensingh

Department of Agricultural Statistics

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. Stat 222

Course Title: Statistics

Credit: 1.5

Students shall maintain a record of everything done in the practical and field sessions in a Practical Note Book to be signed and checked by the relevant teacher (s). Viva-voce test is an essential part of the Practical Examinations.

1. Calculation of simple and multiple correlation coefficients. Fitting simple and multiple linear regression models.
2. Testing hypothesis regarding population mean, testing significance of correlation coefficient and regression coefficient(s), Test of independence of attributes in a contingency table.
3. Field layout, analysis of variance and interpretation of results in completely randomized design, randomized block design and latin square design. Application of least significance difference (LSD) test and Duncan's Multiple Range Test (DMRT).
4. Field layout, analysis of variance and interpretation of results in factorial experiments and split-plot design.
5. Analysis of co-variance for completely randomized design.
6. Use of statistical packages (Excel and SPSS) in solving problems.

References :

1. Ahmed, A. R., M. A. Bhuiya, Z. A. Reza, M. Z. Hossain. 2004. Methods of Statistics for Graduate and Postgraduate Students. S. Ahmed and Associates. 515 pp.
2. Gupta, S. C. & V. K. Kapoor. 2002. Fundamentals of Mathematical Statistics, 11th Edition. S.Chand and Company Ltd., New Delhi.
3. Mead, R., R. N. Curnow and A. M. Hasted. 1993. Statistical Methods in Agriculture and Experimental Biology. 2nd Edition. Chapman and Hall, London.
4. Steel, R. G. D. and J. H. Torrie. 1980. Principles and procedures of Statistics. McGraw-Hill Book Co. Inc. New York.
5. Clarke, G. M. and D. Cooke. 1992. A Basic Course in Statistics. 3rd Edition. Edward Arnold, London.
6. Collett, D. 2003. Modelling Survival Data in Medical Research. Chapman & Hall.
7. Imam, F. 2009. SPSS for Windows. Systech Publications Ltd., Dhaka.

Bangladesh Agricultural University, Mymensingh

Department of Biochemistry

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. BCHEM 225

Course Title: Biochemistry

Credit: 3

Course objectives :

Understanding the chemical basis of life with emphasis on aquatic animals.

Course contents :

1. Introduction to biochemistry: Scope and importance, cell organelles and their functions, water and life.
2. Chemistry and metabolism of carbohydrates: Classification, biological functions and structural features, cell wall polysaccharides, glycolysis, TCA cycle, gluconeogenesis, anaplerotic pathway, hexos monophosphate shunt, cori cycle, regulation of TCA cycle and glycolysis, glycogenesis, glycogenolysis, electron transport chain and oxidative phosphorylation
3. Chemistry and metabolism of proteins: Classification, amino acids and their classification, reactions in protein chemistry, nutritive value of fish protein concentrate (FPC), food protein quality evaluation, chemistry of antifreezing active principle in polar aquatic animal, organization levels, denaturation, basic processes of amino acid catabolism, nitrogen excretory products in aquatic animals, fixation of nitrogen by aquatic plants.
4. Chemistry and metabolism of lipids: Classification and biological functions, fatty acids, their classification and distribution, Omega 3- and omega 6-fatty acids, importance of polyunsaturated fatty acids, chemistry of fish oils, rancidity, role of free radicals in lipid oxidation, antioxidant, lipoproteins, fatty acid oxidation, biosynthesis of fatty acids and cholesterol.
5. Chemistry and metabolism of nucleic acids: Composition, structural features and physico-chemical functions, replication, transcription and translation, biological function of restriction enzymes, concept of recombinant DNA and cloning.
6. Enzymes: Classification, elements of kinetics, mode of action and inhibition, coenzyme and prosthetic groups, allosteric enzyme, lysozymes, enzyme immobilization.
7. Bioenergetics: Concept of free energy, entropy and enthalpy, exergonic and endergonic reactions, ADP-ATP cycle, bioluminescence.
8. Hormones: Characteristics and classification, mode of action and biological functions of pituitary, hypothalamus, adrenal cortex and sex hormones.

Text books :

1. Elliot, W. H. and D. C. Elliot. 1997. Biochemistry and Molecular Biology.
2. Lehninger, A. I. 1976. Textbook of Biochemistry. 2nd Edition. Worth Publishers, New York.
3. Lehninger, A. I. 1980. Principles of Biochemistry. Worth Publishers, New York.

References :

1. Conn, E. C. and P. K. Stump. 1987. Outlines of Biochemistry. 5th Edition. J. Wiley and Sons, New York.
2. Martin, D. W., P. A. Mayes and V. W. Rodwell. 1981. Harper's Review of Biochemistry. 18th Edition. Lange Medical Pub. California.
3. Stryer, L. 1986. Biochemistry. S.K. Jain Publishers, Delhi, India.
4. Watson, D. 1987. Molecular Biology of Gene. Bengamin, Inc.

Bangladesh Agricultural University, Mymensingh

Department of Biochemistry

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. BCHEM 226

Course Title: Biochemistry

Credit: 1.5

Students shall maintain a record of everything done in the practical and field sessions in a Practical Note Book to be signed and checked by teacher (s) concerned. Viva voce test will form an essential part of the Practical Examinations.

1. Preparation of buffer solution and determination of pH
2. Colour tests of carbohydrates and proteins
3. Separation of sugars and amino acids by TCL
4. Isoelectric pH determination of proteins
5. Extraction of starch and glycogen
6. Estimation of fish protein by Kjeldahl method
7. Estimation of casein by Biuret method
8. Estimation of reducing sugars
9. Determination of saponification value, acid value and peroxide value of fish oils
10. Estimation of alpha-amylase
11. Protein fractionation by electrophoresis

References :

1. Glick, D. 1995. Methods of Biochemical Analysis. Interscience Publishers, Inc. N.Y.
2. Litwack, G. 1960. Experimental Biochemistry. John Wiley and Sons. Inc. N.Y.
3. Malhotra, V. K. 1968. Practical Biochemistry for Students. Lypee brothers, N.Y.
4. Plummer, D. T. 1995. An Introduction to Practical Biochemistry. Tata McGraw-Hill. Delhi.
5. Segel, I. H. 1968. Biochemical Calculations. John Wiley and Sons. New York.

Bangladesh Agricultural University, Mymensingh

Department of Fisheries Management

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. FM 221

Course Title: Aquatic Environment and Pollution

Credit: 2

Course objectives :

To increase understanding and build awareness among the students on the nature and causes of degradation and pollution of aquatic environment due to different man made activities and their impacts on living organisms and human health.

Course contents :

1. Aquatic environment and pollution: Key concepts, importance of aquatic environmental maintenance, sensitivity of aquatic biota on environmental changes (DO, pH, NH₃ & NO₂, harmful gases, turbidity, salinity), aquatic pollution, sources of pollution, impacts of pollution on aquatic plants, animals and human health.
2. Agricultural development and pollution: Trends in agricultural development and HYV, inputs used in agriculture (fertilizers, insecticides & pesticides), pollution due to agricultural wastes and pesticides, impacts on aquatic resources.
3. Industrial development and pollution: Types of industries, location, raw materials used, sources and types of industrial byproducts and pollution, toxic effects of pollutants from tannery, pharmaceutical, dyeing and textiles, fertilizers, and chemical industries on freshwater and marine ecosystems.
4. Aquaculture development and environment: Culture practices and related problems, land and water use, materials and inputs used (feeds, fertilizers, chemicals and therapeutants), nutrient accumulation and eutrophication, drainage effect on the adjacent areas and water bodies, loss of natural habitats - mangroves, agricultural lands, livestock pastures etc., suggestions for sustainable growth of aquaculture industries.
5. Algal toxins: Toxic algal blooms, ecological implications of algal toxins in aquatic food webs, mode of action of toxins in seafood poisoning, Paralytic Shellfish poisoning (PSP), Diarrhetic Shellfish Poisoning (DSP), *Ciguatera* Fish Poisoning (CFP), *Pfiesteria* toxin, domoic acid, links between algal toxin, biological changes and productivity, control strategies.
6. Coastal and marine environment degradation: Causes and nature of degradation of coastal and marine environment (urbanization, tourism, shrimp farming, sewage, municipal wastes, disposal of solid wastes, industrial wastes, ship breaking activities, oil spillage etc.), impact on coastal and marine fisheries, measures for maintenance of coastal and marine environment for all living organisms.

Text books :

1. Alabaster, J. S. and R. Lloyd. 1982. Water Quality Criteria for Freshwater Fish. 2nd Ed. Butterfly Scientific Publisher, London. 361 pp.
2. Lloyd, R. 1992. Pollution and Freshwater Fish. Fishing News Books, Oxford, UD. 176 pp.
3. Moriarty, F. 1993. Ecotoxicology: The Study of Pollutants in Ecosystems. Second Edition. T. J. Press (Padstow) Ltd., Padstow, Cornwall, Great Britain. 289 pp.

References :

1. Boyd, C. E. 1988. Water Quality Management for Pond Fish Culture. Elsevier Scientific Publisher B. V., Amsterdam. 318 pp.
2. Calhoun, Y. 2005. Water Pollution. Chelsea House Publishers. 164 pp.
3. Calow, P. 1993 (ed.) Handbook of Ecotoxicology. Volume One. T.J. Press (Padstow) Ltd., Padstow, Cornwall, Great Britain. 289 pp.
4. Carmichael, W. W. 1981 (ed.). The Water Environment: Algal Toxins and Health. Plenum Press. New York. 491 pp.
5. Chorus, I. 2001 (ed.). Cyanotoxins – Occurrence, Causes, Consequences. Springer. 357 pp.
6. Falconer, I. R. 1993. Algal Toxins in Sea Food and Drinking Water. Academic Press. 224 pp.
7. Laws, E. A. 2000. Aquatic Pollution: An Introductory Text. 3rd Ed. Wiley. 639 pp.
8. Saxena, M. M. 1990. Environmental Analysis: Water, Soil and Air. Second Edition. Agro Botanical Publishers (India). 186 pp.
9. Smol, S. 2005. Pollution of Lakes and Rivers. A Hodder Arnold Publication.
10. Ulrich, F. 1981. Metal Pollution in the Aquatic Environment. Springer Verlag.

Bangladesh Agricultural University, Mymensingh

Department of Fisheries Technology

B. Sc. Fisheries (Hons.) Level 2, Semester 2

Course No. FT 221

Course title: Marine Food Chemistry

Credit: 2

Course objectives :

The objective of the course is to equip the students on chemistry of fish food products including the chemical composition, nutritive value, nature and characteristics of different chemical components of fish and shellfish which ultimately determine the food quality, processability and shelf life of fish or shellfish products.

Course contents :

1. Major groups of seafood: Fish, crustaceans, mollusks and marine algae.
2. Protein in seafood: Protein content, protein groups, nutritive value, denaturation and spoilage of protein, stability of muscle proteins under various conditions, gelation properties of fish muscle proteins, changes of protein during processing and preservation of fish and shellfish.
3. Lipid in seafood: Lipid types and their variations, polyunsaturated fatty acids, essential fatty acids, denaturation and rancidity of seafood lipid, convenience food and modern diet.
4. Macro and trace elements in fish and shellfish: Inorganic matter in fish and shellfish, effect of processing and preservation on mineral composition.
5. Vitamins in seafood: Fat- and water-soluble vitamins, vitamin content in small fish, farmed fish and marine fish, effect of processing and preservation on vitamin content.
6. Flavour compounds of seafood: Nitrogenous and volatile compounds.
7. Marine bio-toxins: Toxin in marine vertebrates, invertebrates, seaweed and plankton.

Text books :

1. Hall, G. M. 1997 (ed.). Fish Processing Technology. 2nd Edition. Blackie Academic & Professional, London, Weinheim, New York, Melbourne, Madras. 309 pp.
2. Huss, H. H., M. Jakobsen and J. Liston. 1992. Quality assurance in Fish Industry. In Development in Food Science, Elsevier, Amsterdam, London, New York, Tokyo. 587 pp.
3. Noguchi, T. and K. Hashimoto. 1997. A Pictorial Handbook of the Toxic Fishes Related to Food Hygiene. Midori-Shobou, Tokyo.
4. Ruiter, A. 1995. Fish and Fishery Products: composition, nutritive properties and stability, Cab International, Oxon, UK. 387 pp.

References:

1. Balachandran, K. K. 2001. Post-harvest Technology of Fish and Fish Products. Daya Publishing House, Delhi – 110035. India. 440 pp.
2. Gopakumar, K. 2002 (ed.). Textbook of Fish Processing Technology. Indian Council of Agricultural Research, New Delhi.
3. Govindan, T. K. 1985. Fish Processing Technology. Oxford & IBH publishing Co., New Delhi.
4. Hashimoto, Y. 1979. Marine Toxins and Other Bioactive Marine Metabolites. Japan Scientific Society Press, Japan.
5. Martin, A. M. 1994 (ed.). Fisheries Processing: Biotechnological Applications. Chapman and Hall, London. 494 pp.
6. Motohiro, T., K. Hashimoto, H. Kadota and T. Tokunaga. 1992. Science of Processing Marine Products, Vol. I & II. Kanagawa International Fisheries Training Center. Japan International Cooperation Agency.
7. Nowsad, A. K. M. A. 2007. Participatory Training of Trainers: A New Approach Applied in Fish Processing. Bangladesh Fisheries Research Forum, Dhaka. 326 pp.
8. Stansby, M.E. 1963. Industrial Fishery Technology. Krieger Publ. Co., Hunligton, New York.
9. Tonomura, Y. 1972. Muscle Proteins, Muscle Contraction and Cation Transport. Translated in English by Takeshita, T., University of Tokyo Press.