BIOCHEMISTRY

INTRODUCTION

Biochemistry is the study of the structure, composition, and chemical reactions of substances in living systems. Biochemistry emerged as a separate discipline when scientists combined biology with organic, inorganic, or physical chemistry and began to study such topics as how living things obtain energy from food, the chemical basis of heredity, and what fundamental changes occur in diseases. Biochemistry includes the sciences of molecular biology; immunochemistry; neurochemistry; bioinorganic and biophysical chemistry.

Biochemistry spills over into pharmacology, physiology, microbiology, and clinical chemistry. In these areas, biochemistry may investigate the mechanism of a drug action; engage in viral research, conduct research pertaining to organ function, or use chemical, procedures, and techniques to study the diagnosis and therapy of disease and the assessment of health. The underlying principle of biochemistry understands the structure of living system.

The tapeworms (Cestodes) when live in the intestine of hosts, they utilize food from the gastrointestinal tract. The metabolism of these cestodes depends on the feeding habits and the rich nourishment available in the gut of the host. These worms use this nourishment for their normal development and growth. The metabolic and in vitro studies suggest that a complex nutritional relationship occurs between a cestode and its host. It has been observed in some cestodes that they are capable of fixing CO$_2$. In helminthic biochemistry particular, effects of physiological factors such as pO$_2$, pCO$_2$, temperature, osmotic pressure and ionizing radiation on oxygen uptake and the effects of external substrates and inhibitors were being investigated (Barrett, 1968, 1969, among others).

Much of the interest in parasite biochemistry comes from the ways in which the metabolic pathways have been modified to suit the highly specialised parasitic mode of life. In addition to this intrinsic interest, parasite biochemistry has great practical importance through chemotherapy and vaccine production. In
chemotherapy, parasite biochemistry can contribute to the development of new drugs and to the elucidation of the mode of action of compounds already discovered (J. Barrett, 1981).

The first point of view (the impact of helminth infection on the hosts physiology and nutrition) has been the subject of numerous investigations over the past decade (Stephenson, 1993; Solomons, 1993; Solomons and Scott, 1994; Edirisinghe and Tomkins, 1995; Coop and Holmes, 1996; Knox, 2000). The research on the complex interactions among host nutritional status and parasitic infection has mainly focused on the detrimental consequences of parasitic infections on host nutritional status and on mechanisms by which malnutrition impair immune-competence (Scott and Koski, 2000).

Nutritional deficiencies as a result of intestinal helminth infection have been the subject of several investigations (Hadju, et al., 1996; Lunn and Nothrop-Clewer, 1996). Intestinal helminth may affect the nutritional status by causing increased nutrient loss, in addition to decreased food intake and nutrient absorption (Edirisinghe and Tomkins, 1995). Detailed investigations of the mechanisms of gastrointestinal dysfunction of the parasitized host have shown that the increased endogenous loss of protein into the gastrointestinal tract is a key feature, partly as a result of leakage of plasma protein but also from increased exfoliation of gut epithelial cells and mucoprotein secretion (Bown et al., 1991).

Parasitic worms compete for energy reserves with their fish host (Meakin, 1974; Tierney, 1991; Walkey and Meakins, 1970). There is a clear variation among hosts and parasites in the extent of such effects. This may be due to difference in the extent to which the parasites comprises nutrient reserves.

The overall aim of the present study was to examine the relationship between cestode infection and nutrient reserves in fresh water fish *Channa marulius* (Hamilton, 1822), *Mastacembelus armatus* (Lacepede) in relation to