Chloroquine is a drug used often as an antimalarial. It is known to have definite cidal effect on the Malarial parasite and either no effect or least effect of any sort on the host. The actual mechanism of cidal action on the parasite and the protective mechanism that protects the human host from such cidal action is also known. When we go by therapeutic index of this drug, it does have some toxic effect too. Many of these toxic effects on mammals are being elucidated. Now in the present study, addition of chloroquine to the ambient medium, does lead to not only mortality, but also changes in pupation rate, rate of successful emergence and even the flight index. Thus chloroquine treatment seems to have a profound effect not only on events concerned with survival but also on events concerned with growth, metamorphosis and realisation of adult functional capacities. Since the treatment with chloroquine is only for 48 hours and later the larvae grow and develop only in drug free tap water, the observed effects on growth, metamorphosis and realisation of adult functional capacities, must be attributed to chloroquine that accumulated inside the larvae or due to derailment of some event(s) during the 48 hours of treatment. The dramatic effects at 36 hours of treatment described in chapter I, may be interpreted as due to some important metamorphic/developmental event initiated in the IV instar larvae at that particular point of time i.e., 3rd 12 hours
of treatment. Partial reversal of this chloroquine effect may be construed to mean severe nutritional/metabolic impairment being brought about by chloroquine treatment. However, the more severe effect of chloroquine treatment on rate of pupation and rate of successful emergence among treated larvae compared to untreated larvae, points out that impairment being brought about by chloroquine treatment is in some metamorphic event concerned with pupation on and emergence. So also the more severe effect on flight index of fed larvae might indicate that the impairment being brought about by chloroquine treatment is a developmental event associated with differentiation of flight muscles. Putting all these observations together the following conclusion can be arrived at. Chloroquine accumulates in the treated larvae as shown by fluorescence study and what accumulates by 36 hours is enough to bring about impairment, most probably nutritional/metabolic in nature. This impairment seems to be responsible for the mortality on one hand and growth, metamorphosis, differentiation and development on the other. Provision of an opportunity to feed or the feed supplied, after chloroquine treatment, can reverse this impairment partially, to the extent it is concerned with survival. But it is unable to reverse this impairment as concerned with growth, metamorphosis, differentiation and development. On the other hand the impairment becomes severe in such case,
as most probably these activities concerned with growth, metamorphosis, differentiation and development are stepped up on provision of food.

The metabolic nature of this impairment becomes evident from the results of the 2nd chapter. The transaminases and phosphatases together show one pattern of change in treated larvae, while the phospholipase-A shows a different pattern of change. More interestingly what happens at 36 hours of treatment, seems to be very crucial. At this hour of treatment, transaminase and phosphatase activities drop while phospholipase-A activity rises, implying that overall metabolism instead of being protein-carbohydrate oriented is now, becoming lipid oriented. This is confirmed by the results of third chapter. The change in cholesterol-phospholipid ratio is very critical. Whether this shift from protein-carbohydrate to lipid metabolism is induced altogether by chloroquine treatment for 36 hours or whether such a shift is introduced by any developmental event at 36 hours and then is amplified or alternated by chloroquine treatment, can not be easily decided. But the fact that the 3rd 12 hour treatment with chloroquine has more serious consequences than the 2nd 12 hour treatment (as said in chapter I), is a clear indication in support of the latter alternative.
In the absence of dietary essential fatty acids, most insects abort at the adult moult or exhibit disfunction later in adult life or in subsequent generation (Dadd, 1981). Standly-Samuelson et al., (1985) presented evidence that the quantitatively small but physiologically more active phospholipid fatty acid composition is markedly altered by dietary polyunsaturated fatty acids. Adults can fly only if provided as larvae, with dietary arachidonic or related fatty acids (Standly-Samuelson and Dadd, 1981). A wide spectrum of imaginal body size resulted by varying larval rearing conditions (Crowding, stravation, and optimal food supply). Larval food supply was of primary importance in determining imaginal body size and reserves (Brigel, 1990). Larval history is of primary significance in determining imaginal body size and ultimately fecundity (Brigel, 1990). The extent of larval and imaginal lipogenesis, through larval nutrition and access to vegetable carbohydrates respectively, is of primary importance in finally determining the fecundity of mosquitoes (Troy et al., 1975) although this appears to be a purely metabolic aspect of fecundity regulation. From these reports it is evident that nutritive and metabolic events during larval life are important for developmental events.

In the present study the exact mode of action of chloroquine on the mosquito larvae could not be pin pointed.
Although chloroquine is known as an inhibitor of lysosomal function, Iwamoto et al., (1981) showed that chloroquine acts at a non-lysosomal site in insulin binding. Noriega et al., (1980) showed how chloroquine can disrupt both the intracellular transport of newly synthesized acid by hydrolases as well as uptake of exogenous enzyme by cell surface pinocytosis. Thabrew et al., (1985) reported alterations in microsomal drug metabolizing enzymes and microsomal lipids, due to chloroquine treatment. So it is difficult to conclude that chloroquine, in the present study has affected only the function of lysosomes which are known to play important role in insect metamorphosis. It might have acted at many other sites as well.

At a temperature of 27-28°C pupation began 6 days after hatching (Chang et al., 1965) in Aedes aegypti. But in our own insectorium with IV instar larvae of 4th stage of Culex quinqui fasciatus, used in the present study pupae start appearing from 40th hour onwards. By 43rd hour 8 pupae appear out of 30 larvae, the number of pupae increasing to 21 by 65 hrs and all 30 becoming pupae by 92 hours. Therefore there is no doubt that metamorphic/developmental events commence or are becoming active in the 3rd 12 hours of the experimental period and hence chloroquine treatment during this 3rd 12 hours treatment actively interferes with this event.