Conclusions

The present study has demonstrated that among the four tested aquatic weeds *I. reptans* and *L. minor* could be important sources of proteins, vitamins and minerals suitable for incorporation in fish diet. Though antinutritional factors were found to be present in these weeds, their levels were within the tolerable limits and consumption of these plants would not result in any deleterious effect on the growth of fish, documenting further their utilization for the formulation of balanced fish diet. The fatty acid composition analysis of the four plants reinforces that all the four aquatic weeds are important sources of essential PUFAs, which are important requirement in fish diet for healthy growth.

The feeding experiments demonstrated that among the four tested aquatic weeds *I. reptans* is the most promising weed and can be used as a partial substitute of dietary fish meal protein for the Indian major carp fingerlings - *L. rohita, C. catla* and *C. mrigala*. It was observed that after partial incorporation of *I. reptans* in the diet and post feeding experiment, the cholesterol level in the blood was found to be low whereas the protein content was high in the fish. Further research to completely eliminate or to further reduce the anti-nutrients present in this plant for improving the quality of *I. reptans* based fish meal by employing various processing techniques, is required. Our study demonstrates that commercial exploitation of *I. reptans* for the formulation of efficient, low-cost fish feed for the Indian carps is highly promising. Further, after 60 days indoor feeding trial with *I. reptans* based diets, neither we could observe any significant change in the chemical properties of water nor any foul odor was detected, and all the investigated parameters were well within the normal range required for optimum culture of carps. Therefore, *I. reptans* based diet is an environment – friendly, low pollution feed suggesting its commercial exploitation as fish feed, is highly promising.