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T. Gireesh
Vitamin A deficiency is a major public health problem affecting millions of children world over. Dietary intervention promoting the consumption of micronutrient rich food appears to be a sustainable public health measure for promoting vitamin A status in target population. However, a number of factors can affect the bioavailability of vitamin A. Investigations on the production of intrinsically labelled deuterated carotenoids, evaluation of the bioavailability of carotenoids in different experimental animals and the use of exfoliated colonic epithelial cells as a non-invasive tool to assess the bioavailability of carotenoids in humans, form the subject matter of this thesis.

A brief review of the literature on carotenoids, vitamin A and its biological functions is given in the introductory chapter. The materials and methods employed in the study are given in the Chapter 2. Different aspects of the production of the intrinsically labelled carotenoids using *Spirulina* were studied and the results of these investigations are presented in the Chapter 3. Chapter 4 describes the evaluation of the influence of macronutrients on the bioavailability of carotenoids in different experimental animals. The possibility of using human exfoliated colonic epithelial cells for the assessment of the bioavailability of β-carotene was tested and the results are given in the Chapter 5. A summary of the results of these investigations is also given.