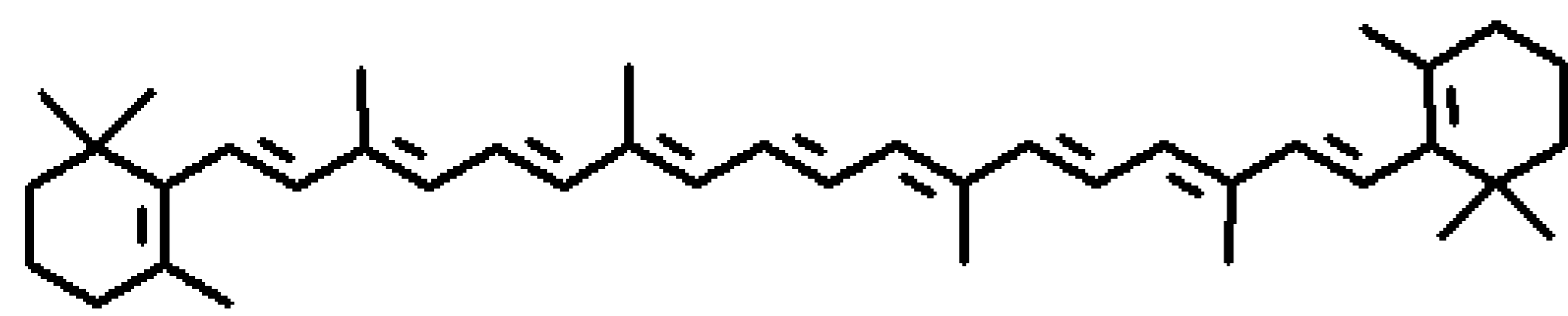


Carotenoid Production in Microorganisms



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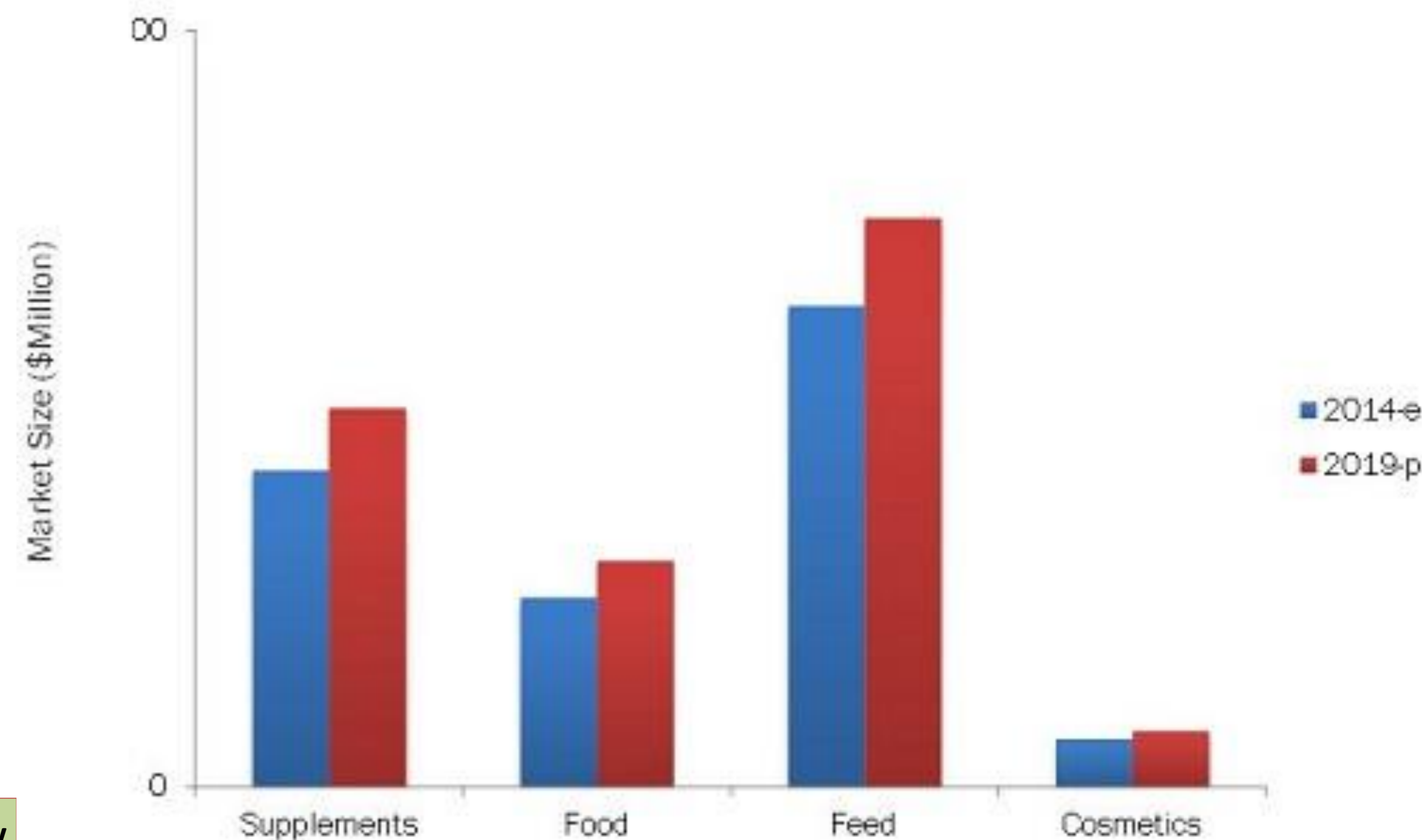
INTRODUCTION

The consumers are demanding more healthier and natural products. This bibliographic review work investigates the microorganisms and methods that are used to increase carotenoid productions. The use of biotechnology in the carotene pathway seems to be a solution for the increased demand of natural carotenoids.

The aim of the present work is to collect the necessary information to know what are carotenoids, where they come from, the techniques that are used for biotechnological carotenoid production and its future trends .

METHODOLOGY:

- Internet
- Databases: Pubmed, Science Direct, Trobador + ...
- Total documents used: 20
- Keywords: 'the name of microorganisms' followed by carotene, bioproduction, carotenogenesis..

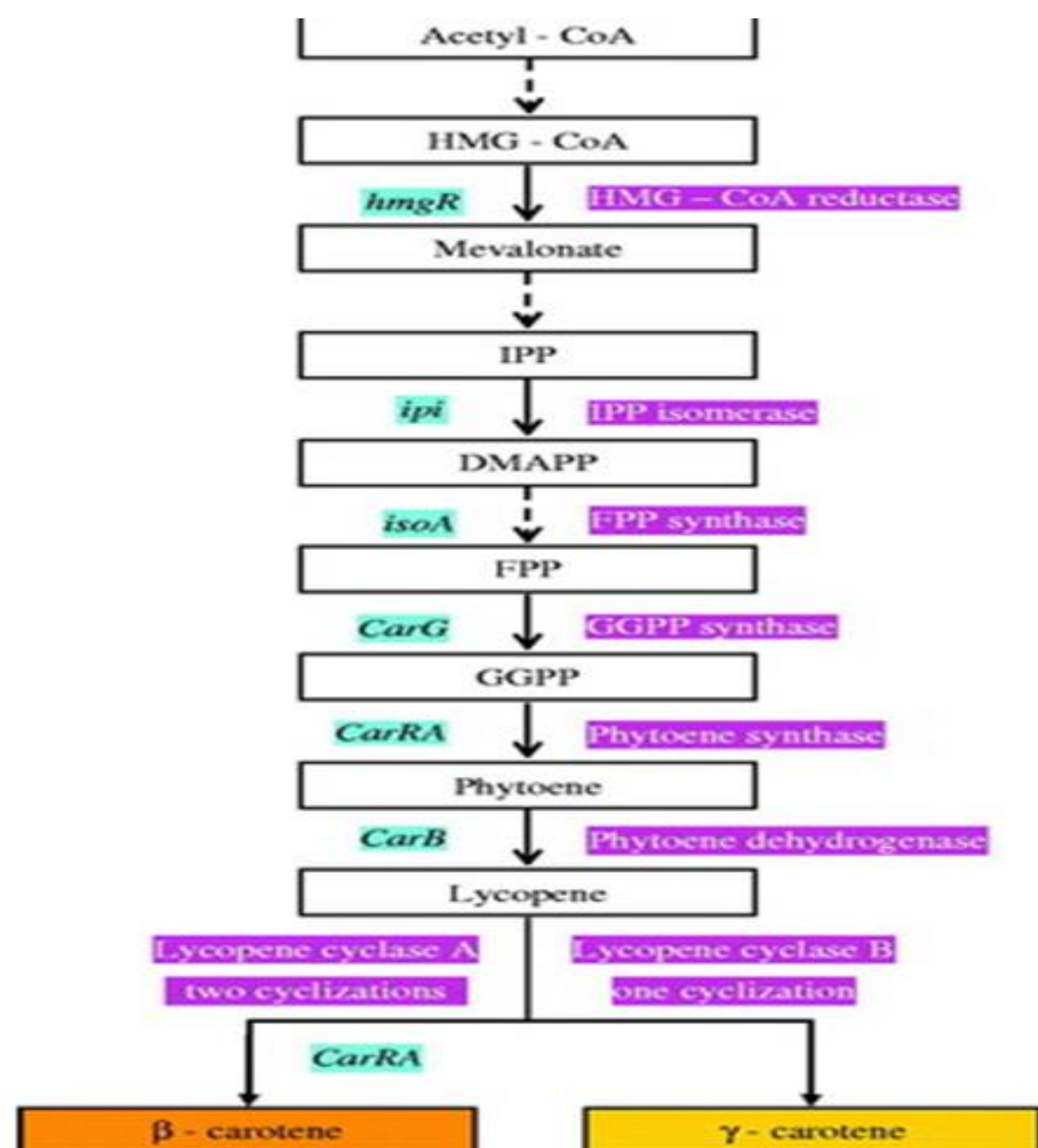
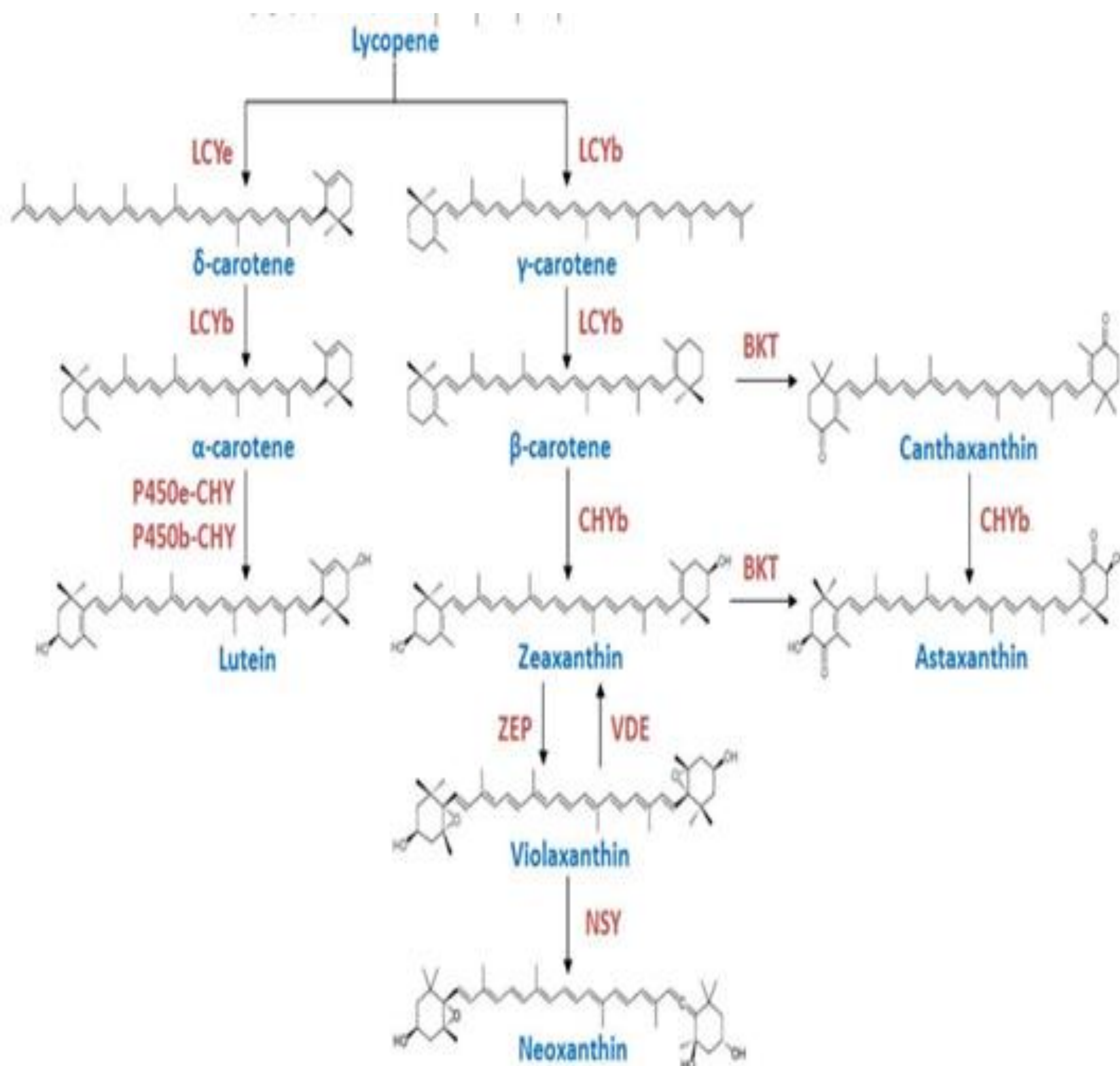


CURRENT SITUATION OF NATURAL CAROTENOIDS:

- Very expensive costs to produce
- Increasing demand
- Very low market segment compared to synthetics carotenoids

METABOLIC ENGINEERING

- Two ways to increase carotenoid production:
 - 1) Carotenogenic gene induction by environmental factors
 - 2) Trough Oxidative stress
- There are five microorganism with good abilities to modify carotenogenesis and maximize production: *Xanthophyllomyces dendrohous*, *Dunaliella salina*, *Blakeslea trispora*, *Chlorella zofingiensis* and *Haematococcus pluvialis*



CONCLUSIONS

- Metabolic engineering is a powerful tool to increase carotenoid production.
- Natural carotenoid market will be increasing in recent years.
- The use of biotechnology can satisfy the consumers demand.