



## Feasibility of Micellar Surface Charge Decoration of Graphene Oxide with Surfactants and Oils as Adsorbents for Natural and Synthetic Pigments (A Review)

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### ABSTRACT

This paper reviews the use of a well-known graphene oxide (GO) as an adsorbent in solid phase extraction (SPE) of plant pigments like  $\beta$ -carotene and other dye contaminants under optimum conditions. Numerous researches had investigated the influence of some surfactants and oils, in particular typically including sodium dodecyl sulfate (SDS), polyethylene glycol p-(1,1,3,3-tetramethylbutyl)-phenyl ether (TX100) and hexadecyltrimethylammonium bromide (CTAB) as auxiliary agents to link in and then modify the polarity of the surface charge of GO. The applicability of SPE based on SDS-GO, TX100-GO and CTAB-GO in real samples was compiled and discussed. The surfactant/oil-surface charge decoration of the GO sorbents for rapid SPE can thus be a potential and suitable candidate for the selective procedure of dispersive solid-phase microextraction of total carotenoids and/or contaminated synthetic dyes from vegetables, fruits or food products.

**Keywords:** Graphene oxide, Surfactant, Oil, Adsorbent, Natural and Synthetic Pigments.

### INTRODUCTION

Generally, humans have living factors as diets, clothes, havens, and medicines. One of these factors will determine healthy lifestyle, good health, happiness, and no illness. The remark "you are what you eat" is the golden words that guide

people to focus on the diets which are very better than ever. Healthy foods such as vegetarian foods and low fatty meals are the proportional arrangement of the five food groups. In fruits and vegetables, their variation of phytochemicals is of importance for the biologically active compounds that found in plants. The interestingly important substance is

