

**METHOD MODIFICATION AND DEVELOPMENT FOR ANALYSIS OF
SYNTHETIC FOOD COLOURANTS**

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Use of synthetic food colourants has played an ever-increasing role in colouring food and beverages. There are only nine permitted synthetic food colourants in Sri Lanka. However, usage of non-permitted colourants is frequently observed. The current method for qualitative analysis of synthetic food colourants used in Sri Lanka is paper chromatography and thin layer chromatography. However, there are many short-comings of such chromatographic methods in qualifying synthetic food colourants. The study is based on paper chromatographic, thin thin-layer chromatographic, column chromatographic, UV-visible spectrophotometric and high performance liquid chromatographic techniques (HPLC) which are more practiced. The study was carried out using candies, carbonic beverages and jelly products. For paper chromatographic and thin-layer chromatographic analysis, shortcomings were highlighted carrying out the experiments. As retention factor results might not be enough to confirm an unknown colourant, UV-visible spectrophotometric technique followed by column chromatographic separation for samples was carried out as a modified method. Column chromatographic separation is inadequate, and results cannot be used for qualitative analysis because it gave different spectral shapes and λ_{\max} values from those of standards. Carbonic beverages and jelly products analyzed with an advanced separation by HPLC coupled with photodiode array detection. Sunset yellow, Tartrazine, Allura Red AC, Indigo carmine, Erythrosine B, Carmosine, Ponceau 4R, Fast green FCF as permitted and two non-permitted synthetic food colourants, namely Rhodomine B and Metanil Yellow, were analyzed. Both qualitative and quantitative analysis can be performed together using HPLC method which resulted in chromatograms with very sensitive sharp peaks without significant residual peaks. The recovery studies indicated recovery of almost 100% for carbonic beverages, and for jellies around 80%. According to the results obtained, HPLC technique was more reliable. However, as this study was carried out only on two food matrices, the technique should be further improved for other food matrices.

Keywords: Analysis of food colourants, HPLC, Sunset yellow, Tartrazine