PREFACE

Colour has fascinated man since the dawn of civilization as it was people of Old Stone Age who painted lifelike figures of animals in many shades of red, yellow, brown and black on cave walls. During the Bronze Age, the art of dyeing was discovered and since then pigments and dyes have provided most of the colours of man-made world.

In the year 1856, Sir W. H. Perkin synthesized mauveine, a purple colour. Soon after this, a number of other colours were synthesized and used in foodstuffs. Since then, synthetic organic colourants have been used to enhance the appearance of foodstuffs from over one hundred years and they remain the most important group of colourants in use in food and drink industries.

The consumer acceptability of any food product is greatly influenced by its appearance, as by its flavour and taste. Artificial colouring is also necessary in case of processed foods, canned and pulped fruits, and vegetables, which often lose their natural colour during processing and storage.

In India, Prevention of Food Adulteration Act, 1954 has permitted eleven synthetic colours, namely, amaranth, carmoisine, fast red E, ponceau 4R, erythrosine, sunset yellow
FCF, tartrazine, indigo carmine, brilliant blue FCF, green S and fast green FCF for colouration of foodstuffs. However, a decennial survey undertaken at Industrial Toxicology Research Centre, Lucknow revealed that on an average about 70% coloured food samples examined contained non-permitted colours. Among them, metanil yellow and orange II were the most commonly encountered colours.

Metanil yellow (CI Acid Yellow 36 (13065), sodium salt of m-(p-anilinophenyl)azo benzene-sulphonic acid) and orange II (CI Acid Orange 7 (15510), sodium salt of p-(2-hydroxy-1-naphthalenyl)azo benzene-sulphonic acid) have been toxicologically classified under the category CII by the Joint FAO/WHO Expert Committee on Food Additives. This category include colours on which data on toxicity are still inadequate for their safety evaluation. This had been the main ground for their non-inclusion in the permitted list of food colours.

Inspite of the non-inclusion in the list of permitted food dyes, both metanil yellow and orange II, are still most frequently used in various eatables and stand on top of the list of commonly encountered dyes in foodstuffs in India. A plan for comprehensive toxicological studies on these dyes was, therefore, felt essential to prove their safety-in-use. Once adequate toxicological data are generated, these may help in arriving at rational decision about the future course of action.
The information ideally needed for the aforesaid requirements include knowledge of their acute, short-term and chronic toxicity, absorption, distribution, metabolism, elimination and accumulation. Since metanil yellow is commonly available in the market under the trade name of metanil yellow 'K', which is an equi-proportion mixture of metanil yellow and orange II, the study on the blend of these dyes was also felt essential. In case of some dyes, it has been shown that certain precursors, impurities or the biometabolites are more toxic than the dye per se and thus possibility of impurities and fate of metabolites were worthwhile to investigate.

In the present dissertation, an attempt has been made to resolve some of the aforesaid problems regarding metanil yellow, orange II, their blend and one of the metabolite of metanil yellow, namely, p-aminodiphenylamine.