

RAPID DETERMINATION OF COLOR ADDITIVES USING SEP-PAK[®] C₁₈ CARTRIDGES

The usual procedure for the isolation of food dyes is a long and tedious process involving two chromatographic steps on Celite and cellulose columns. The time savings offered by the SEP-PAK[®] approach is quite significant, reducing a 4-5 hour procedure to less than one hour's work. In cases where it becomes obvious that a single dye is present, only 15 minutes may be required. The SEP-PAK[®] procedure has been successfully applied to more than 200 food samples, including candy, beverage syrup, gum balls, pudding and pie filling and cologne. Samples were dissolved, acidified and filtered prior to injection. No significant problems were encountered in these analyses.

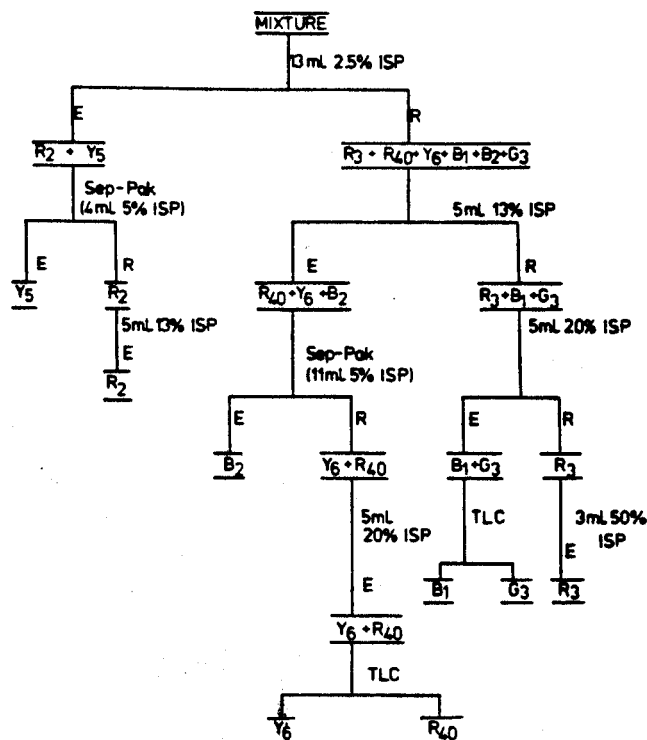


Figure 1. Color mixture schematic. Isopropanol (ISP): E, elutes and R, retains. R₂, Red No. 2; Y₆, Yellow No. 5; Y₄, Yellow No. 6; R₃, Red No. 3; R₄₀, Red No. 40; B₁, Blue No. 1; B₂, Blue No. 2; G₃, Green No. 3.

A recently published report (1) by M. L. Young of the New York Regional Laboratory of the FDA offers a reliable method for the rapid separation and identification of all of the seven permitted FD&C food dyes (Red #3, Red #40, Blue #1, Blue #2, Yellow #5, Yellow #6 and Green #3) as well as the recently banned FD&C Red #2. Most of the dyes can be isolated by the use of step-gradient procedures involving C₁₈ SEP-PAK^R cartridges and simple isopropanol/water eluents according to the scheme shown in Figure 1 below. In the present scheme, the remaining dyes are separated by the application of TLC procedures. In all cases, quantitation is accomplished by UV-visible spectrophotometry.

This application of SEP-PAK^R cartridges indicates the simple but powerful sample preparation which can be achieved by sequential step-gradient procedures. Sugars and flavorings in the food products were generally found to be unretained, giving no interference with the analysis.

1. M. L. Young, J. Assoc. Off. Anal. Chem., 67 (1984) 1022.