

**Identification and determination of unknown subsidiary colors
in commercial Food Green No.3 (Fast Green FCF, FD&C Green No. 3)**

(Received July 8, 2002)

(Accepted November 19, 2002)

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Abstract

Three subsidiary colors (Sub-A, Sub-B, and Sub-E) were isolated from commercial Food Green No.3 (G-3) by using preparative HPLC and their structures were determined by MS and NMR. The structures of Sub-A, Sub-B, and Sub-E were the disodium salt of 2-[[4-[*N*-ethyl-*N*-(3-sulfophenylmethyl)amino]phenyl][4-[*N*-(3-sulfophenylmethyl)amino]phenyl]methyl]io]-4-hydroxybenzenesulfonic acid [abbreviated as HSBA-(*m*-BASA)(*m*-EBASA)], the disodium salt of 2-[bis[4-[*N*-ethyl-*N*-(4-sulfophenylmethyl)amino]phenyl]methyl]io]-4-hydroxybenzenesulfonic acid (abbreviated as *p,p*-G-3), and the disodium salt of 2-[[4-[*N*-ethyl-*N*-(2-sulfophenylmethyl)amino]phenyl][4-[*N*-ethyl-*N*-(3-sulfophenylmethyl)amino]phenyl]methyl]io]-4-hydroxybenzenesulfonic acid (abbreviated as *o,m*-G-3), respectively.

HPLC analyses revealed that the contents of seven subsidiary colors (Sub-A, B, C, E, F, G, and H) including the four subsidiary colors (Sub-C, F, G, and H) reported previously in 4 commercial G-3 products were 0.45~1.20%, 0.19~2.60%, 8.49~27.0%, 0.05~1.52%, 1.15~2.37%, 0.05~0.22%, and ND~0.24%, respectively.