HPLC SEPARATION GUIDE

Analysis of Active Ingredients in a Sun Screen

The main purpose of sun-screening preparations is to protect human skin from the damaging effects of light. By far the best-known light-induced skin damage is light *erythema*, sunburn. It is caused by ultraviolet B (280-315nm) rays. Thus, to be effective, a sun-screening preparation must have a strong absorption within this range. Furthermore, such a protection should also prevent chronic light-induced skin changes, such as premature skin ageing with elastosis, atrophy, hyper- and depigmentation, keratosis, precancerosis, and finally skin cancer. All of these are liable to develop upon continuous excessive light exposure, especially on the sin of the face, neck, and hands (Figure 1).

The derivatives of salicylic acid, p-aminobenzoic acid, cinnamic acid, and benzimidazole, etc., which have maximum absorption in the ultraviolet B have been found as effective screening agents. However, in order to ensure quality assurance and safety in usage, these agents must be carefully monitored in sun-screen preparations.

We report here a reversed-phase HPLC method that results in high resolution of the active ingredients in a sun cream[1] (Figure 2). These ingredients include molecules containing, secondary and tertiary amines, among other groups. Compounds that contain these functional groups are notorious for peak "tailing" in the separation with conventional reversed-phase columns.

The ability to resolve and quantitate these closely related organic acids and salts containing multiple functional groups without any mobile phase additives demonstrates the uniqueness of the bonding process utilized in the preparation of SMT's C8 columns.

Figure 1.

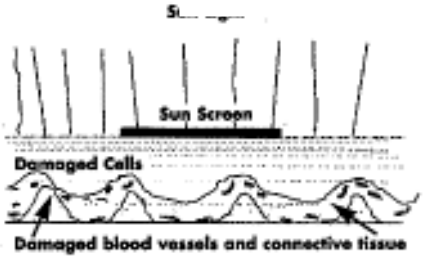
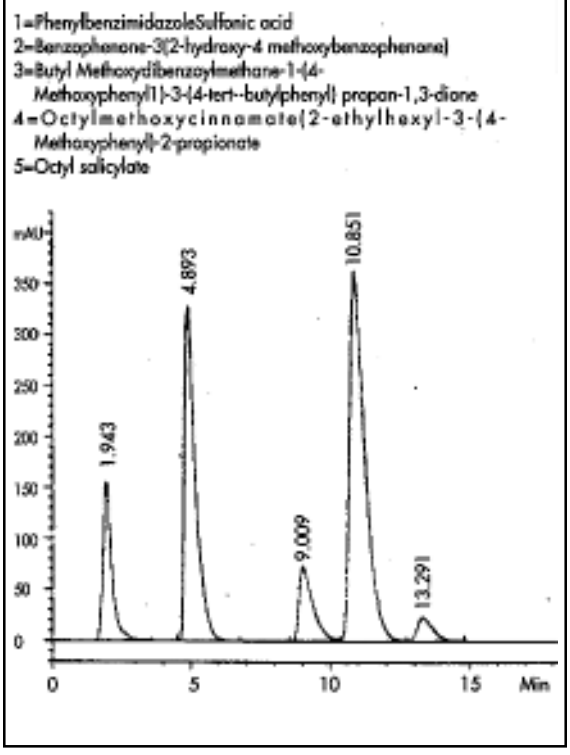


Figure 2.



Chromatographic Conditions (Figure 2)

Column: SMT **0-5-60 with 0-5-60G**
Mobile Phase: 40/60 water/THF
Flow: 1 mL/min

Detector: UV, 325nm

Column Specifications:

Particle:	Silica, 3 μm
Pore Size:	60Å
Surface Area:	500 m^2/g
% Carbon:	14%
pH range:	1-12

*SMT wishes to thank Dr. Rene Rivero of Benckiser Cosmetics, NJ, for the donation of sun-screening agents.

SEPARATION METHODS TECHNOLOGIES
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