b) Explain how the use of the quartz backing plate alleviates the incompatibility of the Transpore™ tape with certain vehicle ingredients and sunscreen application technique.

Comment

The preferred substrates for *in vitro* spectrophotometric measures are synthetic collagen, such as Vitro-Skin™ or roughened quartz plates. Both of these substrates provide simple, inert backgrounds that are transparent to UV and upon which sunscreen products may be uniformly applied. Vitro-Skin™ is collagen, prepared from a cast of the human skin which imparts the topography, i.e., "hills and valleys", to this substrate. Likewise, the quartz plate is "roughened" to generate a texture to simulate skin. In this regard, quartz plate has the added advantage that it may be used repeatedly. The European Cosmetic Toiletry and Perfumery Association (COLIPA) has used quartz plate as a substrate in their studies of *in vitro* UV test methods. This substrate has been recommended for use by the COLIPA *Sun Products Test Measures Task Force.*

The use of Transpore™ tape is not recommended for *in vitro* UV assessment due to a number of limitations, including penetration of UV filters into the tape, vehicle/solvent interactions and perforations in the tape leading to poor film uniformity, especially with products containing pigments such as titanium dioxide or iron oxides. Using a quartz backing plate behind the Transpore™ tape helps to reduce or eliminate poor product film uniformity by providing a background surface that is transparent to UV and which the sunscreen product will spread. However, the aforementioned limitations of Transpore™ tape make it a less than optimal substrate.

It is noteworthy that in the 1996 CTFA submission[4], a variety of substrates were used including Naturalamb™ condoms, Vitro-Skin™ and Transpore™. All three substrates provided similar critical wavelengths in these studies. Thus, although there were no substrate differences in these studies, as stated above there are issues with Transpore™ and in light of superior alternatives, this substrate should be avoided.