

L'ORÉAL

Kawasaki, 20 May 2022

L'Oréal Research & Innovation developed a sunscreen that forms an even UV-protective film on the skin using a new technology that reduces stickiness

– Also realized natural skin tone –

The L'Oréal Research and Innovation Center Japan (Kawasaki, Kanagawa Prefecture; Director: Amit Jayaswal), the Japanese R&D arm of the L'Oréal Group, the world's largest cosmetics company, has developed a sunscreen formula that is less sticky and creates an even UV protective film on the skin using a derivative based on inulin, a polysaccharide produced by plants (inulin lauryl carbamate). The formula also contains light-reflecting, colorless spherical, and platelet particles to provide a natural skin tone enhancement.

About the Usability of Sunscreen Products

Sunscreen products contain inorganic UV-reflecting agents and organic UV-absorbing agents, that give some drawbacks, such as a heavy feel, greasy texture, and oily-shiny look of the skin. Preferred sunscreen products should consider not only the level of protection against UV rays (SPF and PA values), the type of UV rays that can be absorbed or scattered (UV-B, UV-A, and long-wave UV), product safety and formula stability but also cosmetic efficacy and comfort of use.

Technology Overview

Inulin is a linear chain polysaccharide consisting of fructose and has excellent moisture retention properties adsorbing large amounts of water. Emulsions using inulin lauryl carbamate (hereafter INUTE[®]SL1), in which a lipophilic lauryl chain is added to the hydrophilic inulin chain (Figure 1), can form a light, non-sticky cosmetic film on the skin while maintaining the product's function. INUTE[®]SL1* chain molecules are extremely flexible, and when added to an oil/water mixture, the lauryl moiety adsorbs to the surface of the oil at the oil/water interface, and the flexible inulin chains encompass the oil, to form oil droplets. The inulin moiety also adsorbs water, preventing the oil droplets from merging and providing a fresh tactile sensation when applied to the skin. Thus, we obtain an oil-in-water emulsion that is stable as a formula and gives a light, non-sticky feel. The stickiness was measured as the force required to pull away from the probe from the surface of the bioskin applied to the formula; in the case of the formula with INUTE[®]SL1, the average force (g) required to pull away was less than that of the existing formula, indicating that the INUTE[®]SL1 formula was less sticky than the conventional one. (Figure 2). In a 4-week consumer use test on 63 Asian women, 83% rated the formula with INUTE[®]SL1 having a fresh and watery texture, 80% said their skin did not feel greasy after application, and 76% said their skin looked natural.

*: INUTE[®]SL1 is a product of CreaChem BVBA.

Environmentally friendly, sustainable, plant-derived ingredients

The cosmetics material INUTEC®SL1 used in this technology is made from inulin extracted from the chicory plant and lauryl acid obtained from coconuts. This is consistent with L'Oréal's commitments to 2030 under its sustainability program, "L'Oréal for the Future".

The newly developed formula has been applied to La Roche-Posay's UV-IDEA XL Protection Tone-Up Clear, a L'Oréal Group brand.

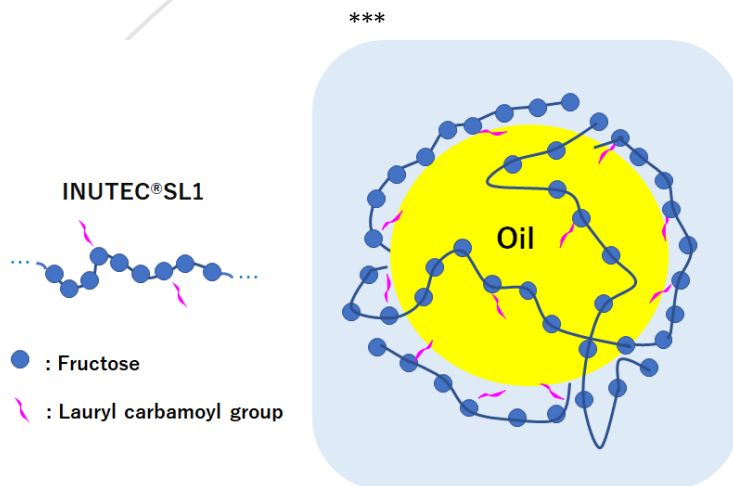


Figure 1: Structure of INUTEC®SL1 and emulsion using it <schematic image>

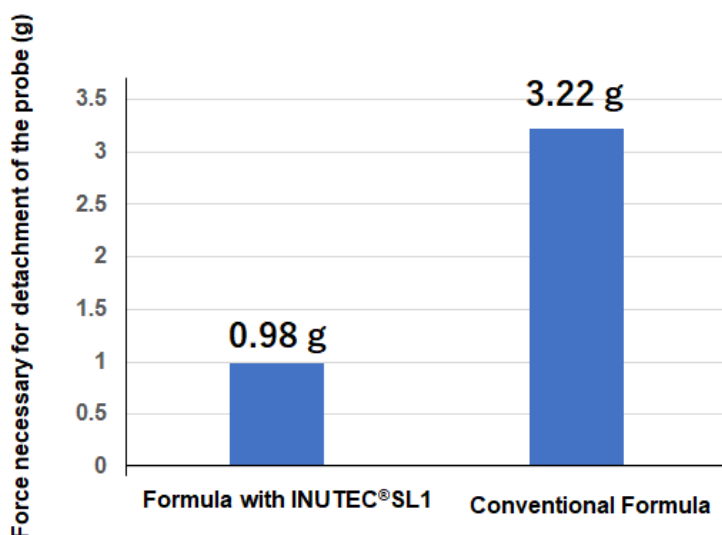


Figure 2: Stickiness measurements of formula with INUTEC®SL1 and an existing formula