Nanoemulsion of Natural Oils for Skin Protection Using Encapsulation Technique

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The objective of my investigation was to design a stable and non-toxic emulsion that could be used for skin protection. Commercially used sunscreens are highly effective to protect skin surface. Some of the elements in sunscreens like Benzophenones, Avabenzone, Para-aminobenzoic acid (PABA) can cause skin allergy, hormone disruption, other skin diseases. My target of this investigation was to replace those harmful ingredients by using natural ingredients. Some natural oils e.g. olive oil, almond oil have UV protective property. Olive oils and almond oils are widely used in skin care. UV light protective emulsion of oils can be produced using nanoencapsulation technique. In this technique, natural oils were assimilated with distilled (DI) water and surfactant. High frequency homogenizer was used to create the emulsions. Concentration and sonication time of oils, DI water and surfactant were varied to analyze different conditions. In this study, olive and almond oil were used to find out the best emulsion in terms of skin protection. DLS (Dynamic Light Scattering), UV-Vis spectroscopy, pH meter were used for the characterization of the produced nano-emulsions. Slow releasing and better protection are expected from these encapsulations of oils. These characterizations such as skin protection factor (SPF), particle size, pH levels have been compared with commercial sunscreens.

Keywords: Natural oils, Nanoemulsion, Encapsulation, skin protection.