

**Research Article****Assessment of *in-vitro* Sun protection factor and rheological profile of some marketed sunscreen formulation in East Vidarbha area**

A. O. Maske\*, Ku. Sonal S. Gupta, Rupendra Motghare, Anil Sao

Bajiraoji Karanjekar College of Pharmacy, Sakoli, 441802 India

Received: 26 March 2020

Revised: 3 May 2020

Accepted: 14 May 2020

**Abstract**

**Objective:** The aim of this study was to determine the *in vitro* SPF values along with P<sup>H</sup> and rheological assessment of five selected sunscreen formulation having labeled SPF, used in east vidharbha region. **Material and methods:** The Sun Protection Factor (SPF) is a very popular factor in assessment of sunscreens product. Unfortunately, there is no proper data available on the study of those cosmetic products mainly on SPF. In fact, among much kind of sun screen products used daily in east vidharbha area, only on a few numbers the SPF is labeled. Five different marketed sunscreen formulation having labeled SPF values in range of 15 to 30 were selected, named as F1 to F5 and assessed for *in vitro* SPF, pH and rheological analysis. It can be observed that the SPF values found for all F1 to F5 are not in close agreement with the labeled SPF. **Results and discussion:** Formulation F1, F2, F3 and F5 have found more than 80% while F4 have found 73.33% when compared with labeled SPF. Rheological profiles indicated that the all sunscreens formulation have pseudo plastic properties and exhibited pH in the range 6.2 to 7.9 Also during collection of sunscreen products it has been observed that, peoples are less aware about protective spectrum of sunscreens, their correct method of application in vidharbha region. **Conclusion:** Study we want to suggest the attention of the scientific community for and also legal authorities that should control the sunscreens industry in order to supervise and prevent this kind of in corrections, maybe creating legal limits for SPF labeled and the correct amount to apply.

**Keywords:** Sun protection factor (SPF), rheological profile, pH measurement

**Introduction**

The skin is the body's first line of defense for external exposure. The signs of ageing skin are most visible in the skin. Although, ageing skin is not a threat of a person, it can have a detrimental effect on the psychology of a person. Much of the premature ageing occurs as a direct or indirect result of skin's interaction with environment. Every year, about one million people are diagnosed with skin cancer and about 10,000 die from malignant melanoma. Most skin cancer occurs on the areas of the body that are most frequently exposed to the sun, such as the face, neck, head and back of the hands (Allen et al., 2014; Dutra

et al., 2004; More et al., 2013). The harmful effects of solar radiation are caused predominantly by the ultraviolet (UV) region of the electromagnetic spectrum, which can be divided into three regions: UVA, from 400 to 320 nm; UVB, from 320 to 290 nm and UVC, from 290 to 200 nm. UVC radiation is filtered out by the atmosphere before reaching earth. UVB radiation is not completely filtered out by the ozone layer and is responsible for the damage due to sunburn and pyrimidine dimmers. UVA radiation reaches the deeper layers of the epidermis and dermis and provokes the premature ageing of the skin and is responsible for the generation of free radicals. UVB radiation is involved in 65% damage of all skin. Exposure to ultraviolet radiation has pronounced acute and chronic effects on the skin. People are conscious of the possible dangers of photo ageing, sunburn and skin cancer, occurring as a result of sun overexposure (Malsawmtluangi et al., 2013; Mishra et al., 2001; Osterwalder et al., 2009). To prevent those

**\*Address for Corresponding Author:**

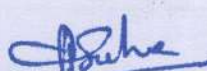
Mr. A. O. Maske

Assistant Professor

Department of Pharmacy, Bajiraoji Karanjekar College of Pharmacy, Sakoli, 441802, India

Email: avinashmaske59@gmail.com

DOI: <https://doi.org/10.31024/apj.2020.5.2.4>2456-1436/Copyright © 2020, N.S. Memorial Scientific Research and Education Society. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

  
Officiating Principal  
Bajiraoji Karanjekar  
College of Pharmacy, Sakoli