

COSMETICS

Evaluation of Antioxidant potential against UVB and H₂O₂

Intrinsic aging is a natural process leading to clinical and histological changes. Its primary cause is the imbalance between reactive oxygen species (ROS) production and neutralization by natural antioxidant systems. Ultraviolet (UV) radiation is the predominant cause of cutaneous oxidative stress, characterized by cellular damage, inflammation and extracellular matrix remodeling. These effects are directly and indirectly linked to ROS production¹, such as hydrogen peroxide (H₂O₂)².

Test system: HEKn (primary human epidermal keratinocytes).

Experimental number: Three wells per group in triplicate.

Reference Item: Ascorbic acid (UVB) and Quercetin (H₂O₂).

Main Read-outs: Fluorescence intensity at 490 nm (excitation) and 530 nm (emission).

Validation Data

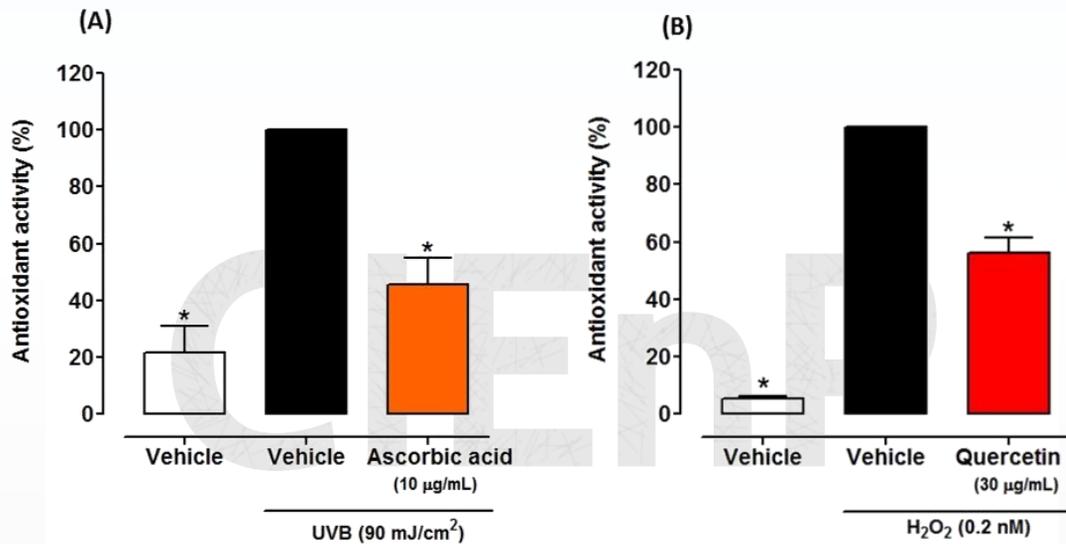


Figure: Antioxidant activity of ascorbic acid and quercetin after UVB and H₂O₂ stimuli, respectively. The figures represent the antioxidant activity of ascorbic acid after UVB radiation (A) and quercetin after H₂O₂ incubation (B) compared with control group (vehicle). Each column represents the mean ± SEM of 3 wells per group in triplicate. Statistical analyses used was one-way ANOVA with a post-hoc Tukey. *P < 0.05 versus vehicle group stimulated with UVB or H₂O₂.

To avoid bias and allow reproducibility and reliability of all in vitro experiments we follow the “Guidance on Good Cell Culture Practice”³. All in vitro experiments are performed in triplicate wells for each condition and repeated at least three times.

References:

- ¹Bosch R; Philips N; Suaáez-Pérez JA. Mechanisms of photoaging and cutaneous photocarcinogenesis, and photoprotective strategies with phytochemicals T. Antioxidants. 2015, 4(2): 248-268.
- ²Gibbons NCJ; Wood JM; Rokos H; Schallreuter KU. Computer simulation of native epidermal enzyme structures in the presence and absence of hydrogen peroxide: potential and pitfalls. J Inv Dermatol. 2006, 126: 2576-2582.
- ³Coecke S; Balls M; Bowe G; Davis J; Gstraunthaler G, Hartung T, Hay R, Merten OW, Price A, Schechtman L, Stacey G, Stokes W. Guidance on good cell culture practice: a report of the second ECVAM task force on good cell culture practice. Altern Lab Anim. 2005, 33(3):261-87.