food&health

mibelle GROUP biochemistry

Evaluation of the Antioxidant Profile of EnduBerry™ Nu in Human Keratinocytes

S-901
Test institute: ANTI OXIDANT POWER, 31000 Toulouse, France
Sponsor: Mibelle AG Biochemistry, 5033 Buchs, Switzerland

INTRODUCTION

Free radicals are highly reactive and unstable molecules, which are naturally formed in the body as a byproduct of normal metabolism, or after exposure to environmental stressors such as UV light and toxins. Particularly during exercise free radicals are produced, the main source being mitochondrial superoxide production (1). Despite being unstable and having only a short lifespan, free radicals can cause extensive oxidative stress, resulting in cell damage.
Numerous plant-derived phytochemicals have been shown to function as antioxidants, thereby neutralizing the free radicals and reducing the risk of cell damage. In this study, the antioxidant profile of EnduBerry™ Nu, a Haskap Berry extract, was investigated in human keratinocytes. For this, a cell-based method was used to determine the direct, intracellular antioxidant activity.

STUDY DESIGN

Test samples

A stock solution of EnduBerry™ Nu (a natural extract derived from the Haskap berry) was prepared by dissolving the test compound in water and subsequent sterile filtration.

Cell cultivation and treatment

Keratinocytes were grown in 96-well plates in serum-free media and incubated with Haskab Berry extract for 4 h prior to performing the assay. Cells were then treated for 1 h with the fluorescent biosensor thiazole orange. Upon excitation at 480 nm, fluorescence was measured at 535 nm with 20 iterations.

Light-Up Cell System (LUCS) to determine intracellular antioxidant activity

The photo-inducible fluorescent biosensor thiazole orange is taken up by the cells. In healthy cells, the fluorescence level remains low due to a drug efflux transport. Upon application of light, the biosensor produces single oxygen which in turn causes production of reactive oxygen species (ROS) within the cell. These ROS damage the cells so that they can no longer transport the fluorescence-emitting dye out. Consequently, the measured fluorescence increases proportionally to the ROS levels upon application of light. The antioxidant activity of a substance can be measured as a delay in the kinetic evolution of fluorescence emission.

Mibelle AG Bolimattstrasse 1 5033 Buchs Switzerland
T +41 62 836 11 11 F +41 62 836 14 05 www.mibellebiochemistry.com

RESULTS

The antioxidant index was calculated from the kinetic profiles and reflects the ability of a compound to delay the emission of fluorescence and thus to reduce the ROS levels inside the cells. EnduBerry™ Nu proved to have a direct intracellular antioxidant activity: it led to a dose-dependent decrease in fluorescence emission in the LUCS assay, which is graphically represented as antioxidant index (Figure 1). The antioxidant index of 0.7 % EnduBerry Nu was almost as potent as the reference substance quercetin at 0.15 %.

In conclusion, EnduBerry™ Nu has beneficial antioxidant effects on the cells. Therefore, supplementation with EnduBerry™ Nu may lead to improved cell fitness by quenching intracellular ROS formation.

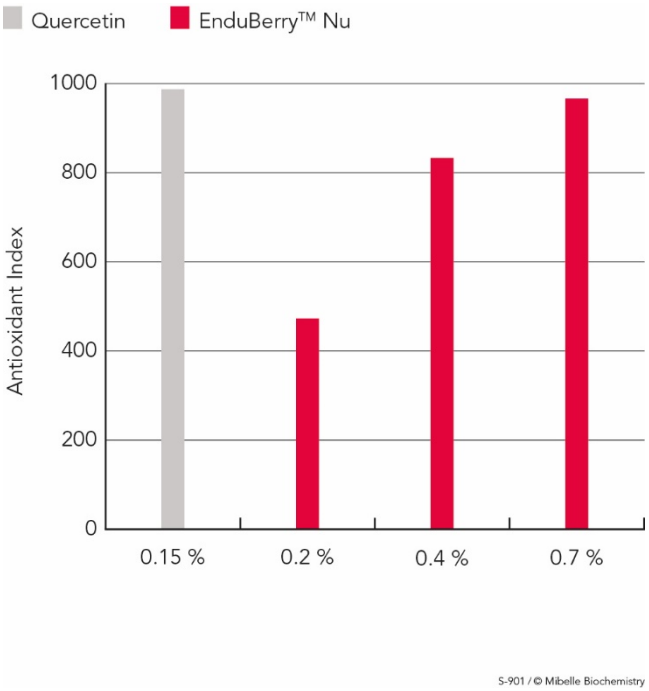

Figure1: Dose-Dependent Quenching of Intracellular ROS Formation

REFERENCES

1) Cooper, C. E., Vollaard, N. B., Choueiri, T., & Wilson, M. T. "Exercise, free radicals and oxidative stress." Biochemical Society transactions (2002) 30(2): 280–285.

Mibelle AG Bolimattstrasse 1 5033 Buchs Switzerland
T +41 62 836 11 11 F +41 62 836 14 05 www.mibellebiochemistry.com