

## Supporting Information

**Title: Lutein Activates the Transcription Factor Nrf2 in Human Retinal Pigment Epithelial Cells**

**Short title: Nrf2 Activation in ARPE-19 Cells by Lutein**

### Authors:

Katja **Frede**<sup>ab\*</sup>, ([frede@igzev.de](mailto:frede@igzev.de)); Franziska **Ebert**<sup>b</sup>, ([fraebert@uni-potsdam.de](mailto:fraebert@uni-potsdam.de)); Anna P. **Kipp**<sup>c</sup>, ([anna.kipp@uni-jena.de](mailto:anna.kipp@uni-jena.de)); Tanja **Schwerdtle**<sup>b</sup>, ([anja.schwerdtle@uni-potsdam.de](mailto:anja.schwerdtle@uni-potsdam.de)); Susanne **Baldermann**<sup>ab</sup>, ([baldermann@igzev.de](mailto:baldermann@igzev.de))

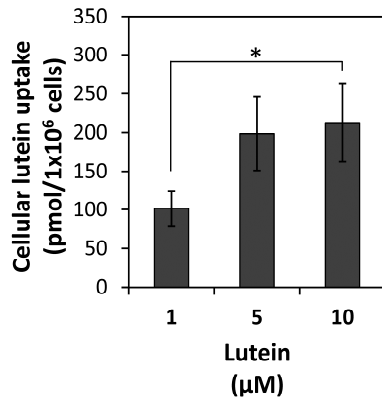
### Affiliations:

<sup>a</sup> Leibniz-Institute of Vegetable and Ornamental Crops Großbeeren/Erfurt e.V., Plant Quality and Food Security, Theodor-Echtermeyer-Weg 1, 14979 Großbeeren, Germany

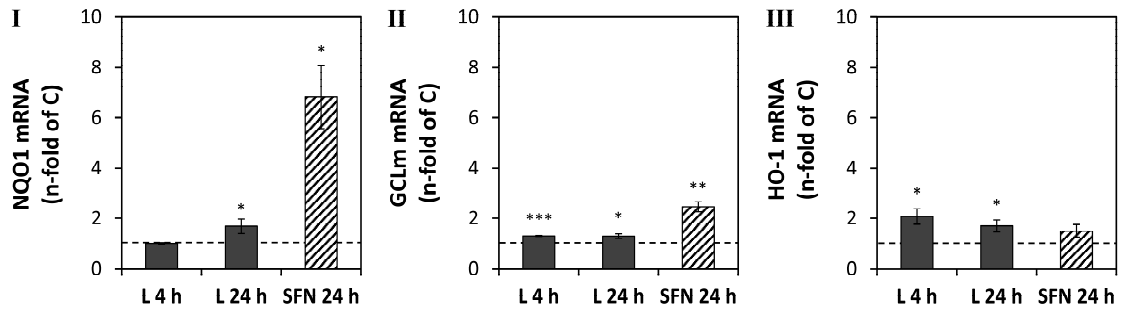
<sup>b</sup> University of Potsdam, Institute of Nutritional Science, Department of Food Chemistry, Arthur-Scheunert-Allee 114-116, 14558 Nuthetal, Germany

<sup>c</sup> Friedrich Schiller University Jena, Institute of Nutrition, Dornburger Straße 24, 07743 Jena, Germany

**\* Corresponding author:** Katja Frede - Leibniz-Institute of Vegetable and Ornamental Crops Großbeeren/Erfurt e.V., Plant Quality and Food Security, Theodor-Echtermeyer-Weg 1, 14979 Großbeeren, Germany. Tel.: +49 (0) 33701-78313; Fax. +49 (0) 33701-55391; Email: [frede@igzev.de](mailto:frede@igzev.de)



**Figure S1.** Cellular lutein uptake of ARPE-19 cells in pmol/1x10<sup>6</sup> cells. Cells were incubated with lutein-loaded micelles for 24 h. Lutein was extracted from cells and quantified by LC-ToF-MS. Values are presented as mean ± SD (n = 3). Significant difference (\* p ≤ 0.05).



**Figure S2.** Effect of lutein (5 μM lutein (0.01% Tween40)) on transcript levels of Nrf2 target genes. ARPE-19 cells were incubated with 5 μM lutein (0.01% Tween40) (L) for 4 h and 24 h or with 10 μM sulforaphane (SFN) for 24 h. The mRNA levels of (I) NQO1, (II) GCLm and (III) HO-1 were analyzed by RT-qPCR. All values were normalized to the expression of the gene of interest in control cells (C, represented by a dashed line): with unloaded micelle-treated cells for lutein-loaded micelles, water-treated control cells for sulforaphane. Data are shown as mean ± SD (n = 3). Significant difference (\* p ≤ 0.05, \*\* p ≤ 0.01, \*\*\* p ≤ 0.001) was determined compared to control cells.