Investigation of the effect of UV-LED exposure conditions on the production of vitamin D in pig skin - DTU Orbit (17/08/2018)

The dietary intake of vitamin D is currently below the recommended intake of 10-20 µg vitamin D/day. Foods with increased content of vitamin D or new products with enhanced vitamin D are warranted. Light-emitting diodes (LEDs) are a potential new resource in food production lines. In the present study the exposure conditions with ultraviolet (UV) LEDs were systematically investigated in the wavelength range 280-340 nm for achieving optimal vitamin D bio-fortification in pig skin. A wavelength of 296 nm was found to be optimal for vitamin D3 production. The maximum dose of 20 kJ/m2 produced 3.5-4 µg vitamin D3/cm2 pig skin. Vitamin D3 produced was independent on the combination of time and intensity of the LED source. The increased UV exposure by UV-LEDs may be readily implemented in existing food production facilities, without major modifications to the process or processing equipment, for bio-fortifying food products containing pork skin.

General information
State: Published
Organisations: National Food Institute, Research Group for Bioactives – Analysis and Application, Department of Photonics Engineering, Diode Lasers and LED Systems
Authors: Barnkob, L. L. (Intern), Argyraki, A. (Intern), Petersen, P. M. (Intern), Jakobsen, J. (Intern)
Pages: 386–391
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: Food Chemistry
Volume: 212
ISSN (Print): 0308-8146
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 5.19 SJR 1.793 SNIP 2.109
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.85 SJR 1.731 SNIP 2.095
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.562 SNIP 1.946 CiteScore 4.31
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.557 SNIP 2.01 CiteScore 3.92
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.554 SNIP 2.056 CiteScore 3.87
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.762 SNIP 2.342 CiteScore 3.98
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.911 SNIP 2.383 CiteScore 4.17
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.981 SNIP 2.253
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.789 SNIP 2.023
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.47 SNIP 1.706
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.475 SNIP 2.087
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.028 SNIP 1.526
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.077 SNIP 1.438
Scopus rating (2003): SJR 0.876 SNIP 1.248
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.966 SNIP 1.235
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.785 SNIP 0.975
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.588 SNIP 0.961
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.654 SNIP 0.921
Original language: English
Vitamin D, Bio-fortification, Light-Emitting Diodes, Ultra violet light
Electronic versions:
2016_Skinpaper_unedited.pdf. Embargo ended: 24/05/2017
DOIs:
10.1016/j.foodchem.2016.05.155
Source: PublicationPreSubmission
Source-ID: 123927326
Publication: Research - peer-review › Journal article – Annual report year: 2016