INFLUENCE OF DIFFERENT LIGHTING SPECTRUM AND *BOTRYTIS CINEREA* ON TOTAL PHENOLIC CONTENT IN GREEN-LEAF LETTUCE

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Nowadays artificial lighting is widely used at closed environment systems. That innovative growing method is safe because of its opportunities to use less of fertilizers. In the same way red (650–660 nm) and blue (450–460 nm) light emitting diodes (LED) lighting induce growth and development of vegetables. Also spectrum of chlorophyll absorbtion appropriate blue and red lights suppress most of pathogenic fungus such as *Botrytis cinerea* (BC). This fungus has great adaptability under broad environmental conditions and is well known to rapidly develop fungicide resistance lines [1]. Plants response to pathogens by activating phenolics that can expressed locally at the site of pathogen invasion as well as systematically in the uninfected tissue [2]. Phenolics are biological active components which possess antioxidant and plant defence mechanism properties. Furthermore, the commercial development of plants as sources of antioxidants that can be used to enhance the properties of foods, for both nutritional purposes and for preservation, is currently of major interest [3].

The aim of the research was to determine hight pressure sodium (HPS) and led emitting diodes (LED) lighting influence for total phenolic content in lettuces (*Lactuca sativus* L.) after its inoculation with *B. cinerea*.

The objects were: 'Little Gem' green-leaf lettuces and *B. cinerea* LT13B_FRA_76 (BC). Lettuces were grown in the growth chambers for 4 weeks. Day/night temperatures of 21 / 17 ±2 ˚C and relative humidity 70–85 %. The experiment conducted under different lighting conditions – high pressure sodium (HPS) and light emitting diodes (LED's). Photosynthetic photon flux density was set on 200 $m^{-2}s^{-1}$ and selected 16-h photoperiod. The BC isolate was maintained on Potato Dextrose Agar (PDA) at 22±2 ˚C in the dark for 7 days. Plants were inoculated with the 50 mm diameter isolate. After experiment was made biochemical analysis. 1/4 millilitre of extract was diluted with 1/4 ml Folin–Ciocalteau reagent (Folin reagent diluted with bi-distilled water 1:8) and with 1/2 ml 7.5% Na_2CO_3 solution. The absorbance was measured after 20 min at 765 nm with Genesys 6 spectrophotometer (Thermospectronic, USA) against water as a blank [4]. The total phenolic content (TPC) was measured spectrophotometricaly of inoculated and healthy lettuces (control) lettuces every day till 7 days after inoculation (DAI).

Results showed that 1 and 2 DAI the TPC concentration of infected lettuces under both lighting conditions were higher than non-infected lettuces. 3 and 4 DAI the TPC of infected lettuces under HPS was lower, but higher under LED light than non-infected plants. Results of 5–7 DAI the TPC of infected plants decreased respectively. On the contrary, infected lettuces under HPS revealed that increased of TPC on 5 and 7 DAI.

As a result, phenolic compounds had tendency to increase on first and second days after inoculation independent from different lighting conditions. Other days TPC varied subject from BC progress and lighting spectrum. Supposedly that with the TPC increased other antioxidants such as enzymes, but further researches are needed.

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