MELANIN content in melanocytes, while accumulation of nicotine in tissues containing melanin may also have impact on melanogenesis.

RESULTS

The effect of simultaneous exposure of melanocytes to nicotine in concentrations 0.1 mM, 0.5 mM and 1.0 mM and UVA radiation for 30 min, resulted in cell loss by 5.4%, 6.6% and 14.2%, respectively. After exposure of melanocytes to UVA radiation for 15 min, the significant decrease in cells viability was only observed for the highest tested concentration of nicotine. After incubation of light pigmented melanocytes with nicotine in concentrations 0.5 mM and 1.0 mM for 24 h and exposure to UVA radiation for 15 min, melanin content was decreased by 8.8 and 20.0%, respectively, when compared with the controls. After exposure to UVA radiation for 30 min, only nicotine in the highest tested concentration caused decrease in melanin content by 11.1%. Tyrosinase activity for the concentration of nicotine 1.0 mM and exposure to UVA radiation for 15 min or 30 min decreased by 18.8% or 11.8%, respectively, when compared with the controls.

CONCLUSION

Our results demonstrate that simultaneous exposure of cells to UVA radiation and nicotine in non-cytotoxic concentrations causes significant alterations of biochemical processes in melanocytes, like inhibition of melanogenesis. The result of this study may explain a potential ability of nicotine to modulate the viability and biochemical processes in light pigmented melanocytes in vivo, especially when using nicotine replacement therapy (NRT) and being exposed to the sun.

This work was supported by Medical University of Silesia (Grant No. KGW-1-015/K/A/0).