Antiangiogenic Potential of Phellodendron amurense Bark Extract Observed on Chorioallantoic Membrane

Authors : Ľudmila Ballová, Slavomír Kurhajec, Eva Petrovová, Jarmila Eftimová

Abstract : Angiogenesis, a formation of new blood vessels from a pre-existing vasculature, plays an important role in pathologic processes such as the growth and metastasis of tumours. Tumours cannot grow beyond a few millimetres without blood supply from the newly formed blood vessels from the host tissue, a process called tumour-induced angiogenesis. The successful research of antiangiogenic treatment of cancer has focused on nutraceuticals with angiogenesis-modulating properties. Berberine, as a major active component of the bark of Phellodendron amurense Rupr., has shown antitumour activity by intervening into different steps of carcinogenesis. The influence of ethanolic extract of Phellodendron amurese bark on the angiogenesis was tested in vivo on chick chorioallantoic membrane (CAM). The irritancy of the CAM after the application of the crude bark extract dissolved in normal saline (10 mg/mL) was investigated on embryonic day 7. No significant signs of the irritancy, such as vasoconstriction, hyperaemia, haemorrhage or coagulation were observed which indicates the harmless character of the extract. A significant reduction in vessel sprouting and higher percentage of avascular zone was observed in the case of CAM treated with the extract in comparison with non-treated CAM (control), which is a proof of the antiangiogenic potential of the extract. These results could contribute to the development of novel drugs for the treatment of cancer or other diseases, in which angiogenesis plays a significant role.

Keywords : angiogenesis, berberine, chorioallantoic membrane, irritancy, phellodendron amurense

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