Title: Involvement of lipoxygenase in ultrasound-stimulated Taxol biosynthesis in suspension cultured- Corylus avellana cells

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Abstract: Elicitation is based on signal (elicitor) induced expression of defense related genes, which subsequently results in increased synthesis of secondary metabolites in intact plants or in plant cell cultures. Studies in recent years demonstrated that lipoxygenase (LOX) might play an important role in the plant defence response. In the present work we studied the role of LOX in Taxol biosynthesis pathway in Corylus avellana suspension cultures under ultrasound elicitor. The cells were grown in LS media and were exposed to ultrasound at power density of 4 mW/cm² for 4 to 40 min. Changes of LOX activity, expression of 1-Deoxy-D-Xylulose-5-Phosphate Reductoisomerase (DXR) and phenylalanine ammonialyase (PAL) were measured. LOX activity rapidly began to increase after sonication, attained its peak at 48 h. No change was observed in LOX activity of the control cultures. Significant increase also was observed in the expression PAL and DXR genes. The results demonstrated that LOX is involved in the elicitor induced production of Taxol.

Key word: lipoxygenase, phenylalanine ammonialyase, Taxol, ultrasound

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