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Na^+, K^+-ATPase and Ca^{2+}-ATPase activities in basal and microvillous syncytiotrophoblast membranes from preeclamptic human term placenta

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Abstract

Objective: The aim of this study is to evaluate the effect of preeclampsia on the level of lipid peroxidation, activity and expression of both plasma membrane Ca^{2+}- and Na^+, K^+-ATPases in syncytiotrophoblast. *Methods*: The level of lipid peroxidation was estimated by measuring TBARS. ATPase activities were quantified by a colorimetric method measuring the amount of inorganic phosphate during the assay. Expression of Ca^{2+}- and Na^+, K^+-ATPases in syncytiotrophoblast plasma membranes and term placenta tissue sections was investigated using Western blot and immunohistochemistry, respectively. *Results*: Our results show a higher level of lipid peroxidation of syncytiotrophoblast plasma membranes from preeclamptic, as compared to uncomplicated pregnant women. Preeclampsia also significantly reduced the activity of Ca^{2+}- and Na^+, K^+-ATPases; however, expression of both ATPases was unaffected. *Conclusion*: Our findings suggest that the reduction of Ca^{2+}- and Na^+, K^+-ATPase activities during preeclampsia could be at least partially due to an increased level of lipid peroxidation of the syncytiotrophoblast plasma membranes.

Ca^{2+}-ATPase | Na^+, K^+-ATPase | Preeclampsia | Placenta | Syncytiotrophoblast