

Elevated serum levels of peroxiredoxin I in patients with breast carcinoma

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Peroxiredoxin (Prx) is a novel group of peroxidases containing high antioxidant efficiency. The mammalian Prx family has six distinct members (Prx I-VI) in various subcellular locations, including peroxisomes and mitochondria, places where oxidative stress is most evident. The function of Prx I in particular has been implicated in regulating cell proliferation, differentiation, and apoptosis. In previous study, we demonstrated that the mRNA and protein levels of Prx I in breast carcinoma are much higher than those of the normal controls. The aim of this study was to assess the clinical significance of serum Prx I levels in patients with breast carcinoma. To clarify whether both plasma levels of Prx I could be a breast cancer marker, we measured the serum levels in patients with breast carcinoma using an ELISA, and investigated its associations with the tumor grading from I to III. We have found that the plasma Prx I level of the cancer patients were significantly higher than those of normal subjects. The serum levels were correlated with progress of the carcinoma. At the cut-off value 1.171 mg/ml on the receiver operating characteristic (ROC) curve, Prx I could discriminate breast carcinoma patients from normal subjects with a sensitivity of 89.8%, specificity 82%, and area under curve (AUC) 0.909 $\pm$ 0.015. For other members of Prx family (Prx II-VI) at their cut-off points, they could not well discriminate the two groups with a lower sensitivity and specificity compared to Prx I. We also investigated the serum level of Prx I in various patients with lung, colon, and kidney carcinomas. Analysis of the corresponding ROC curve indicated that Prx I could be most potential biomarker for breast carcinoma. Taken together, we concluded that serum Prx I level is a new biomarker for breast carcinoma. **This work was financially supported by Regional Research and Development Cluster Project (B0009735) funded by the Ministry of Knowledge Economy (MKE) of Korea.*