

SOD was determined at 56 h, while minimum levels of CAT and GPx were determined at 8 and 104 hours, respectively. In addition, CAT and SOD activities decreased before developing BEFV-caused CPE. In conclusion, it may be stated that CAT and SOD levels may be used as marker in BEFV-caused oxidative changes, and antioxidant therapy may be recommended in the treatment of BEFV infection.

References

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Purification and characterization of mitochondrial thioredoxin reductase enzyme from rainbow trout (*Oncorhynchus Mykiss*) liver and investigation of some metal ions' *in vitro* effects on enzyme activity

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Thioredoxin reductase (E.C 1.6.4.5.; TrxR) is a homodimeric enzyme belonging to flavoenzymes family. TrxR catalyzes the NADPH-dependent reduction of thioredoxin and other substrate disulphide bonds via its selenocysteine/FAD active site. Mammalian TrxR consequently participates in diverse metabolic reactions involving oxidation-reduction cycles and it is widely believed to be central to intracellular ROS mitigation (1). Thioredoxin/Thioredoxin reductase system reduces free radicals and functions on oxidized ascorbat recycles. The reduced thioredoxin acts as an electron acceptor and thioredoxin peroxidase reduces hydrogen peroxide to water (2). In this study; purification and characterization of mitochondrial TrxR, an enzyme that play important roles in oxidative stress and many important cellular events was aimed. The purification of the enzyme was performed by two steps as preparation of homogenate and 2',5'-ADP Sepharose 4B affinity chromatography. Enzyme was obtained having a specific activity of 11.9 EU/ml proteins with a yield of 2.38% and 672 of purification

fold. The purity of the enzyme was controlled and molecular weight of its subunits were calculated as 70 kDa by SDS-PAGE. The native molecular mass of the enzyme was found to be approximately 151 kDa by gel filtration chromatography. Optimal pH, optimal ionic strength, optimal temperature, stable pH for enzyme were determined as pH 7.5 at 500 mM phosphate buffer, 0°C and pH 8.0 at phosphate buffer, respectively. Besides, K_M constants and V_{max} values for both substrates, DTNB and NADPH, were calculated as 0.828 μ M and 0.079 EU/ml and 12.65 μ M and 0.513 EU/ml. Respectively *in vitro* effects of Al^{3+} , Co^{2+} , Fe^{3+} , Cu^{2+} , Ni^{2+} and Se^{4+} metal ions on the enzyme activity were examined. While Se^{4+} metal ions were enhancing the enzymatic activity, other metal ions showed inhibition. V_0 values and turnover number (Kcat) for DTNB were calculated as $44 \times 10^3 \text{ min}^{-1} \mu\text{M}^{-1}$ and $36.2 \times 10^3 \text{ min}^{-1}$. Mitochondrial TrxR which has antioxidant property and is subject of cancer research was purified from rainbow trout liver more practical method than literature, characterized and determined kinetic properties. Then, effects of some metal ions on the enzyme activity were examined to give an idea of treatment of diseases associated with TrxR.

References

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Effects of YC-1 on zinc, copper, lipid peroxidation, nitric oxide levels and superoxide dismutase activities in single-dose pentylenetetrazole-induced epileptic seizures

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