

According to the degree of the protective effect, i.e., lowering of the cell death rate, all the studied substances can be placed in the following sequence: NAC > carnosine > mexidol.

Apart from antioxidant capacity, the decrease in the cell death rate upon carnosine administration jointly with heavy metals can be explained by the ability of carnosine to form complexes with metal ions—copper, magnesium, zinc, cadmium, iron, etc. [22].

The ability of mexidol to increase cell viability and lower cell death rate in a culture can be related to its direct antioxidant potential, in particular, to its abilities to bind superoxide anion radicals [31], react with lipid peroxide radicals and hydroxyl peptide radicals, lower nitric oxide (NO) level in tissues, and increase the activity of antioxidant enzymes [32].

Conclusion

In conclusion, the data obtained in this study demonstrated that the studied antioxidants possess a capability to enhance the resistance of cultured cells in conditions of heavy metal toxicity, which may be indicative of their protective potential in vivo, in particular, for nervous tissues. This should give an impulse for further studies with the goal to attain practical significance.

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