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Differential mechanism of retention of Cu-pyruvaldehyde-bis(N^4-methylthiosemicarbazone) (Cu-PTSM) by brain and tumor: A novel radiopharmaceutical for positron emission tomography imaging

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The reductive retention of ^{62}Cu-PTSM was comparatively studied in the brain and Ehrlich ascites tumor cells by electron spin resonance spectrometry and nonradioactive Cu-PTSM. In the brain, only the mitochondrial fraction showed the ability to reduce Cu-PTSM, and the other subcellular fractions did not. In contrast, the cytosolic fraction of Ehrlich ascites tumor cells was the specific site of Cu-PTSM reduction. It was therefore considered that the retention of Cu-PTSM in the brain is closely related to mitochondrial reduction, most probably involving the mitochondrial electron transport system.

Key words: Cu-PTSM, reduction, metabolism, brain, tumor