



Determination of Oxidative Status in EDTA Plasma of Hemodialysis Patients by PerOx Assay

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Introduction

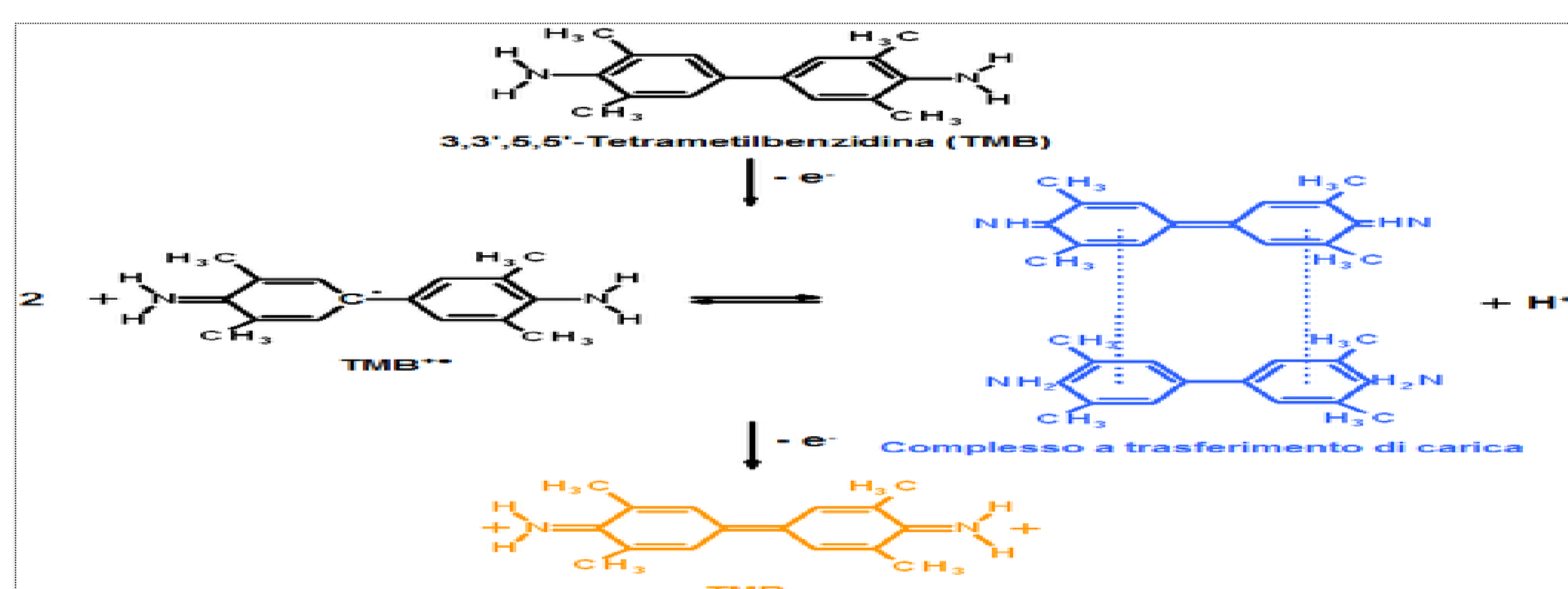
Patients with end stage renal disease undergoing regular hemodialysis very often suffer from oxidative stress, which is defined as a state where the production of reactive oxygen species exceeds the capacity of the antioxidant defense systems in the cells and tissues. It has been observed that the free radical induced lipid peroxidation can further lead to a significant tissue damage, which plays role in the pathogenesis of various co-morbidities in the hemodialysis patients.

Aim

The aim of this study was to determine the plasma levels of total hydroperoxides in hemodialysis patients before the single hemodialysis session (N=13) in comparison with healthy persons (N=38), using an in-house PerOx assay, as an indication and quantification of the plasma oxidative status/oxidative stress.

Methods

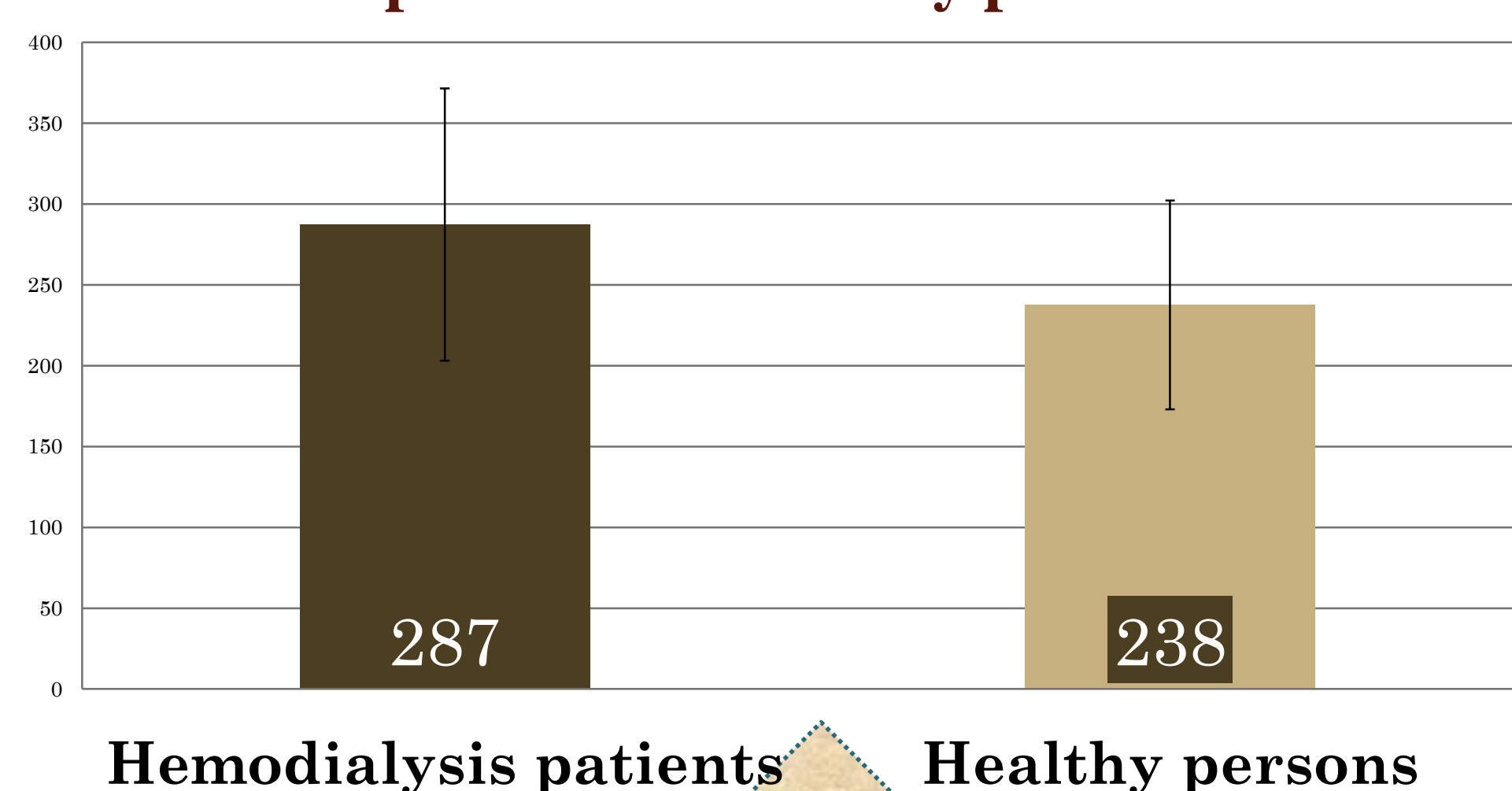
The determination of plasma hydroperoxides was performed by their reaction with horseradish peroxidase, followed by conversion of tetramethylbenzidine (TMB) into a colored product.



Results

The results from the PerOx assay have shown that hemodialysis patients have significantly higher concentrations of plasma hydroperoxides (287 ± 84 CARR U) than healthy subjects (238 ± 65 CARR U) $p < 0.05$ (one CARR U corresponds to $0.08 \text{ mg}/100\text{mL H}_2\text{O}_2$).

Hidroperoxides (CARR U) in hemodialysis patients and healthy persons



Conclusion

These results indicate that the PerOx assay reflects an increased oxidative stress which is related to the end stage renal disease and chronic hemodialysis