Effect of rutin on total antioxidant status of rats exposed to cigarette smoke

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Abstract:
Exposure to tobacco smoke impairs the antioxidant defense mechanisms. In female Wistar rats fed on regular rodent chow and supplemented with a flavonoid rutin, Trolox Equivalent Antioxidant Capacity (TEAC) was measured as an ABTS-radical cation reduction power in plasma, lungs, liver, brain and kidneys. Exposure to smoke reduced the TEAC values in the liver, brain and kidneys and enhanced antioxidant potential in lungs in comparison to control animals. In plasma no change of TEAC value was observed. Supplementation with rutin increased antioxidant status of plasma, but TEAC was reduced in kidneys, brain and liver of smoke-exposed animals when compared to the matched controls. In lung no change in TEAC was found. The results suggest a complex pattern of influence of tobacco smoke on blood and tissue antioxidant mechanisms. The enrichment of diet with non-nutrient antioxidant rutin did not result in direct improvement of tissue TEAC with the exception of blood plasma.

Key words:
reactive oxygen species, cigarette smoke exposure, total antioxidant status, Trolox Equivalent Antioxidant Capacity, rutin