

[PS1.17]

Biological response of mitochondria to humic substances *in vitro* and *in vivo*

Ladislav Vaško*, Janka Vašková
Pavol Jozef Šafárik University, Slovakia

Humic acids are active substances used in prophylaxis and treatment. The mechanism of their action in organism remains unclear. Potential changes in antioxidant activities in rat and chicken liver mitochondria as an effective source of reactive oxygen species even under normal conditions *in vitro* and *in vivo* were assessed.

In vitro results showed strengthening of enzymatic defence. Results of *in vivo* study indicated that supplementation of humic acids initially reduced superoxiddismutase activity but this was followed by a reverse effect, resembling physiological decrease with age. Other enzymatic antioxidants investigated showed uniform response involving undepleted, even enhanced levels of reduced glutathione. It is interesting that observation of the effect of these particularly large, low-soluble molecules on intestinal mitochondria proved enhanced defence.

Keywords: humic acid, mitochondria, antioxidant enzyme, prophylaxis