

:

joshaghanihr@goums.ac.ir :

// : // :

IBL

SOD

SOD,GPX

MDA

ELISA

%

GPX

MDA

SOD

t

($p < /$)

($p < /$)

(SOD, EC 1.15.1.1)

Hammond and Hess)

SOD (1985)

(Oakeshott et al. 2005)

SOD (Kodama et al. 1989)

Cu/Zn SOD))

SOD

-

SOD (Mn-SOD) SOD
Horiuchi et al.) (EC-SOD)
(2004

CBC LaMotta and) SOD
(Woronick 1971
(GPX)

rSOD , rGPX
()
(IBL) ELISA sSOD
MDA

GPX SOD
)
(

%
%
%
%
()
ANOVA t
%

(/ ± /) (rSOD)
(rGPX)
(%) (sGPX) (sSOD)
() (MDA)

(%)

)

(

(Ranjbar et al. 2002a)

IU/L 2067 ± 7970 IU/L 2496 ± 9569

Panemangalore

IU/grHb10.8 ± 48.1

IU/grHb 16.9 ± 37.4

SOD

($p < /$)

%

SOD t

($p < /$)

Panemangalore et al.)

%

(1999

MDA

($p < /$)

Dowla

GPX

($p < /$)

($p < /$)

GPX ($p < /$)

CHE SOD

(acephate)

maleic)

SOD

(hydrazide

(Dowla et al. 1996)

Prakasma

(Prakasama et al. 2001)

MDA

(dipterex)

SOD, GPX, AChE

(Zhou et al. 2004)

(paraquat)

-

(Ranjbar et al. 2002b)

()

SOD

-

(Shadnia et al. 2005)

DNA

()

SOD

Olgum and Misra)

(2006)

()	()	
(/)	(/)	
(/)	(/)	%
(/)	(/)	%
(/)	(/)	%
(/)	(/)	%
()	()	

rGPX (U/gr Hb)	rSOD (U/gr Hb)	sGPX (U/L)	TANT (mmol/l)	MDA (nmol/ml)	sSOD (U/ml)	
/ ± /	±	±	/ ± /	/ ± /	/ ± /	*
/ ± /	±	±	/ ± /	/ ± /	/ ± /	**
/ ± /	±	±	/ ± /	/ ± /	/ ± /	
/ ± /	±	±	/ ± /	/ ± /	/ ± /	*
/ ± /	±	±	/ ± /	/ ± /	/ ± /	**
/ ± /	±	±	/ ± /	/ ± /	/ ± /	

**

*

:TANT

:MDA

:sSOD

:rGPX

:rSOD

:sGPX

sGPX1	sGPX2	rSOD1	rSOD2	rGPX1	rGPX2	sSOD1	sSOD2	MDA1	MDA2	TANT1	TANT2	sCHE
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	

sGPX1	sGPX2	rSOD1	rSOD2	rGPX1	rGPX2	sSOD1	sSOD2	MDA1	MDA2	TANT1	TANT2	rCHE
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	
±	±	±	±	±	±	±	±	/ ± /	/ ± /	/ ± /	/ ± /	

:sCHE

:TANT

:MDA

:sSOD

:rCHE

:rGPX

:rSOD

:sGPX

- sprayer. *Clin Chim Acta* .**310**(2), pp.107-12.
- Ranjbar, A., Pasalar, P. and Abdollahi, M., 2002a. Induction of oxidative stress and acetylcholinesterase inhibition in organophosphorous pesticide manufacturing workers. *Hum Exp Toxicol*. **21**(4), pp. 179-82.
- Ranjbar, A., Pasalar, P., Sedighi, A. and Abdollahi, M., 2002b. Induction of oxidative stress in paraquat formulating workers. *Toxicol Lett*. **131**(3), pp. 191-194.
- Shadnia, S., Azizi, E., Hosseini, R., Khoei, S., Fouladdel., S., Pajoumand, A., Jalali, N. and Abdollahi, M., 2005. Evaluation of oxidative stress and genotoxicity in organophosphorus insecticide formulators. *Hum Exp Toxicol*. **24**(9), pp. 439-445.
- Zhou, JF., Zhou, W., Zhang, SM., Luo, YE. and Chen, HH., 2004. Oxidative stress and free radical damage in patients with acute dipterex poisoning. *Biomed Environ Sci*. **17**(2), pp. 223-233.
- Dowla, HA., Panemangalore, M. and Byers, ME., 1996. Comparative inhibition of enzymes of human erythrocytes and plasma in vitro by agricultural chemicals. *Arch Environ Contam Toxicol*, **31**, pp. 107-114.
- Hammond, B. and Hess, ML., 1985. The oxygen free radical system: potential mediator of myocardial injury. *J Am Coll Cardiol*. **6**(1), pp. 215-20.
- Horiuchi, M., Tsutsui, M., Tasaki, H., Morishita, T., Suda, O., Nakata, S., Nihei, S., Miyamoto, M., Kouzuma, R., Okazaki, M., Yanagihara, N., Adachi, T. and Nakashima, Y.,n 2004. Upregulation of vascular extracellular superoxide dismutase in patients with acute coronary syndromes. *Arterioscler Thromb Vasc Biol*. **24**(1), pp. 106-11.
- Kodama, K., Hirayama, A. and Komamura, K., 1989. Human plasma superoxide dismutase (SOD) activity on reperfusion injury with successful thrombolysis in acute myocardial infarction. *Jpn J Med*. **28**(2), pp. 202-6.
- LaMotta, RV. and Woronick, CL., 1971. Molecular heterogeneity of human serum cholinesterase. *Clin Chem*, **17**, pp. 135-144.
- Oakeshott, JG., Devonshire, AL., Claudianos, C., Sutherland, TD., Horne, I., Campbell, PM., Ollis, DL. and Russell, RJ., 2005. Comparing the organophosphorus and carbamate insecticide resistance mutations in cholin- and carboxyl-esterases. *Chem Biol Interact*. **15**, pp. 157-158.
- Olgun., S. and Misra, HP., 2006. Pesticide induced oxidative stress in thymocytes. *MolCell Biochem*. **290**(1-2), pp. 137-144.
- Panemangalore, M., Dowla, HA., Byers, ME., 1999. Occupational exposure to agricultural chemicals : effect on the activities of some enzymes in the blood of farm worker, *Int Arch Environ Health*. **72**(2), pp. 84-8.
- Prakasma, A., Sethupathy, S., Lalitha, S. and Plasma, RBC., 2001. antioxidant status in occupational male pesticide