



()

(Carcharhinus dussumieri)

*

: _____

(DMBA)

(Carcharhinus dussumieri)

(PSTE) (PRTE)

() PRTE () () PSTE

PRTE : _____

(P < /) PSTE PSTE

(P < /) PRTE PRTE

PSTE

(P < /)

: _____

: _____

// : // :

()
 ()

()
 ()

()
 ()

()
 ()

() AE-940 () U995 ()

/ -

-
 ()

()

()

()

()

()

¹ Unconventional therapy
² Antiangiogenetic agent

.()

DMBA

.()

() ()

() ()

: (PRTE)

DMBA

(DMBA)

(=)

DMAB

) PRTE

(=) (

.()

: (PSTE)

DMBA

(=)

DMBA

) PSTE

(=) (

DMBA

DMBA

² *Carcharhinus dussumieri*³ Pre tumor establishment⁴ Post tumor establishment¹ 7,12 Dimethyl benz[α]anthracene

1 V
w

(/) ()

])
[(Kolmogorov Smirnov) (

SPSS
(SPSS Inc., Chicago, IL, USA)
P < /

DTD ()

-
)

(

PRTE
()
) PRTE
PRTE PRTE (

(P > /)

PSTE
)
(/) (

PSTE
PSTE
(p < /)

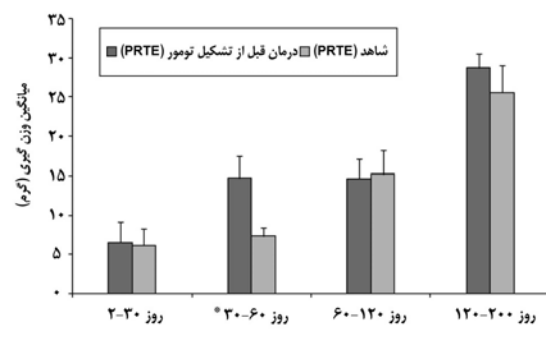
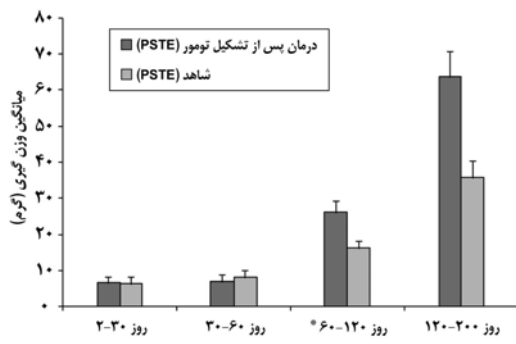
$$V = \frac{\pi w l^r}{\epsilon}$$

¹ Drug Treated Diet

PSTE
(p < /)
PSTE
(P > /)
PSTE
(±)
(PSTE) (PRTE)

NS	/ ± /		PRTE
	/ ± /		PRTE
P < /	/ ± /	/ ± /	PSTE
	/ ± /	/ ± /	PSTE

PSTE PSTE
PRTE
(P > /)
PSTE (P < /)
PRTE
(P < /) (P > /)



PSTE

PSTE

PRTE

PRTE

DMBA

.(*)

DMBA

.(*)

PSTE

(p < /)

PRTE

()

() ()

() ()

(PRTE)

DMBA

(PRTE)

(PSTE)

PRTE

()

()

()

()

¹ Tumorigenesis

(PSTE)

PRTE

SSCVII

CH3

.()

U995

DMBA

U995

PRTE PSTE

B-16-F15

.()

PRTE

I

PANI

.()

)

PSTE

(

DMBA

.()

References:

- 1-Ernest E, Casileth BR. How useful are unconventional cancer treatment? *Eur J Can* 1999; 35: 1608-13.
2. Folkman J. Tumor angiogenesis: Therapeutic implications. *New Eng J Med* 1971; 285: 1182-6.
3. Lane IW. Sharks don't get cancer. Avery publishing group Inc. New York, 1993.
4. Ostrander GK, Loprinzi CI. Sharks do get cancer: Few surprises in cartilage research. *J Natr Can Ins* 2005; 97: 1562-3.
5. Ostrander GK, Cheng KC, Wolf JC, et al. Shark Cartilage, Cancer and the growing treat of pseudoscience. *Cancer Res* 2004; 64: 8485-91.
6. Brem H, Folkman J. Inhibition of tumor angiogenesis mediated by cartilage. *J Exp Med* 1975; 141: 427-30.
7. Langer R, Berm H, Falterman K, et al. Isolation of a cartilage factor that inhibits tumor neovascularization. *Science* 1976; 195: 10.
8. Sheu JR, Fu CC, Tsai ML, et al. Effect of U995, a potential shark cartilage derived angiogenesis inhibitor, on anti-angiogenesis and anti-tumor activities. *Anticancer Res* 1998; 18: 4435-41.
9. Deplanque G, Harris Al. Antiangiogenic agent; clinical trial design and therapies in development. *Eur J Cancer* 2000; 36: 1713-24.
10. Gonzales RP, leyva A, Moreas Mo. Shark cartilage as source of antiangiogenic compounds: From basic to clinical research. *Biol Pharm Bull* 2001; 24: 1097-101.
11. Begenal FS, Easton DF, Harris E, et al. Survival of patient with breast cancer attending Bristol Cancer Help Centre. *Lancet* 1990; 336: 606-10.
12. Miller DR, Anderson GT, Stack JS, et al. Phase I/II trial of the safety and efficacy of shark cartilage in the treatment of advanced cancer. *J Clin Oncol* 1998; 16: 3649-55.
13. Loprinzi LC, Levith R, Barton DL, et al. Evaluation of shark cartilage in patient with advanced cancer. *Cancer* 2005; 104: 176-82.
14. Costa I, Solanas M, Escrich E. Histopathological characterization of mammary neoplastic lesions induced with 7,12-Dimethyl Benz[a]Anthracene in the rat. *Arch Pathol Lab Med* 2002; 126: 915-27.
15. Newman V, Rock CI, Faerber S, et al. Dietary supplement use by women at risk for breast cancer recurrence. *J Amer Diet Asso* 1998; 98: 285-92.
16. Zuhair MH, Feyzi R, Sheikhan A, et al. Low molecular weight fraction of shark cartilage can modulate immune response and abolish angiogenesis. *Int Immunopharmacol* 2005; 5: 961-70.
17. Horseman MR, Alsner J, Overgaard J. The effect of shark cartilage extracts on the growth and metastatic spread of the SCCVII carcinoma. *Acta Oncol* 1998; 37: 441-5.
18. Kern BE, Balkon JH, Antonio BA, et al. Troponin I Peptide (Glu94-Leu 123), a cartilage-derived angiogenesis inhibitor: in vitro and in vivo effects on human endothelial cells and on pancreatic cancer. *J Gastro Surg* 2003; 7: 961-9.