

Oxidative Stress Amelioration Effects of Active Constituent of *Ocimum sanctum*

OBJECTIVE

To investigate the antioxidant activity of triterpenic acid: ursolic acid (UA) in *C. elegans* wildtype and *skn-1*- and *prdx2*-deficient strains.

MATERIALS AND METHODS

The *C. elegans* strains (N2 wildtype, QV225 *skn-1* deficient, and VC289 *prdx2* deficient) were used in this study. The antioxidant activity of UA in *C. elegans* wildtype and *skn-1*- and *prdx2*- deficient strains was evaluated by 2,7-dichlorodihydrofluorescein diacetate (H2DCF-DA) and juglone assays using standardized assay protocols. In H2DCF-DA and juglone assays, age synchronized L4 and L1 larvae respectively were either treated with 100 μ M of UA, 100 μ M fluoxetine or DMSO 0.1% (Control) for 24 h. The results in H2DCF-DA assay were represented as reactive oxygen species (ROS) reduction in percent after 2 h. The survival of the worms was monitored after 1 h in juglone assay.

RESULTS

Effect of Ursolic acid on antioxidant assay

	N2	QV225	VC289
Control	100.0 \pm 4.1	100.0 \pm 6.9	100.0 \pm 2.0
Ursolic acid	47.3 \pm 13.9 (p < 0.001)	16.2 \pm 9.1 (p < 0.001)	65.6 \pm 2.1 (p < 0.01)
Fluoxetine	32.6 \pm 2.3 (p < 0.001)	62.0 \pm 8.6 (p < 0.05)	51.6 \pm 2.6 (p < 0.001)

ROS levels in% \pm SD and p value.

Values expressed mean \pm SD; n=3

p values < 0.05 were considered to be significant as compared to control

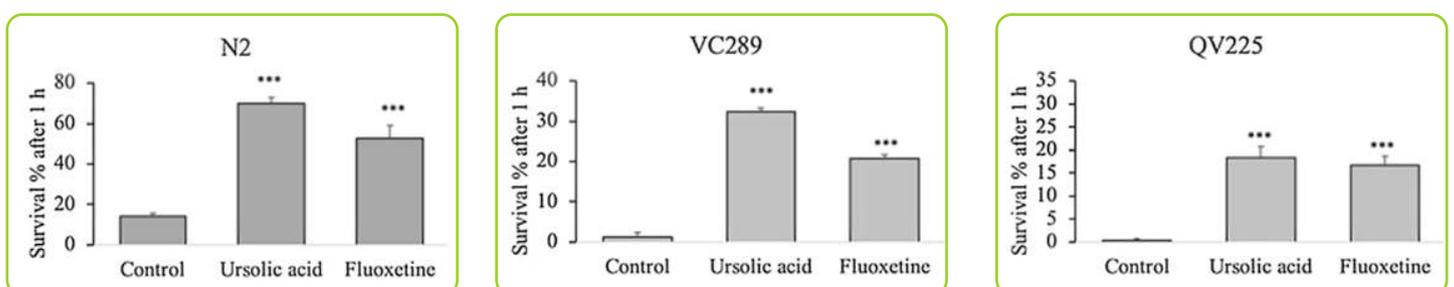


Figure: Effect of Ursolic acid on juglone assay for the strains N2, QV225 and Vc289

Values expressed mean; n=3

*** p <0.001, ** p <0.01, * p <0.05 as compared to control

CONCLUSIONS

- All strains treated with ursolic acid generated less ROS compared to the untreated controls.
- Juglone plus fluoxetine-treated worms showed a lower survival than juglone plus ursolic acid treated worms after 1 h (32.33% vs. 20.67%; p < 0.001).

OUTCOME

These data depicted that ursolic acid exhibited strong antioxidant activities.

Reference:

Naß J, Abdelfatah S, Efferth T. The triterpenoid ursolic acid ameliorates stress in *Caenorhabditis elegans* by affecting the depression-associated genes *skn-1* and *prdx2*. *Phytomedicine*. 2021;88:153598.