



# Evaluation of the Antioxidant Effects and Quality Control of Two Hepatoprotective Formulations in Persian Medicine

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## Introduction:

Free radicals can lead to liver dysfunction. Two multi-ingredient formulations entitling “*Qurs-e-Vard*” and “*Qurs-e-Zereshk*” have been suggested as hepatoprotective formulations in Persian Medicine (TPM).

## The Objective of the study:

The aim of this study was to assess the possible antioxidant activities of “*Qurs-e-Vard*” and “*Qurs-e-Zereshk*” formulations.

## Materials and methods:

Preparation of “*Qurs-e-Vard*” and “*Qurs-e-Zereshk*”

TPC and TFC

Ash values

Heavy Metals Investigation

Determination of microbial contamination

DPPH, NO, and FRAP assays

TLC fingerprinting

### “*Qurs-e-Vard*”

*Rosa damascena*  
(7 parts)



*Rhus coriaria*  
(3.5 parts)



*Glycyrrhiza glabra*  
(1 part)



### “*Qurs-e-Zereshk*”

*Berberis vulgaris*  
(5 parts)



*Cucumis sativus*  
(2 parts)



*Cichorium intybus*  
(2 parts)



*Portulaca oleracea*  
(2 parts)



*Glycyrrhiza glabra*  
(1.5 part)



## Total phenolic and flavonoid contents:

TPC ± SD [mg GAE/g of Dry Matter]	TFC ± SD [mg Quercetin/g of Dry Matter]	Formulations
376±0.93	26.27±0.98	“ <i>Qurs-e-Vard</i> ” (EtOH 70%)
31.46±.13	5.26±.16	“ <i>Qurs-e-Zereshk</i> ” (EtOH 70%)

## Results of ash values:

Formulations	Ash soluble in water	Ash dissoluble in acid	Total ash content
“ <i>Qurs-e-Vard</i> ”	2.3%	3.8%	5.3%
“ <i>Qurs-e-Zereshk</i> ”	2%	5.4%	8.2%

## Results of heavy metals assessment:

Formulations	As	Cd	Pb
“ <i>Qurs-e-Vard</i> ”	<20	<0.5	299
“ <i>Qurs-e-Zereshk</i> ”	<20	15	199
Standard limit (ppb)	4000	300	10000

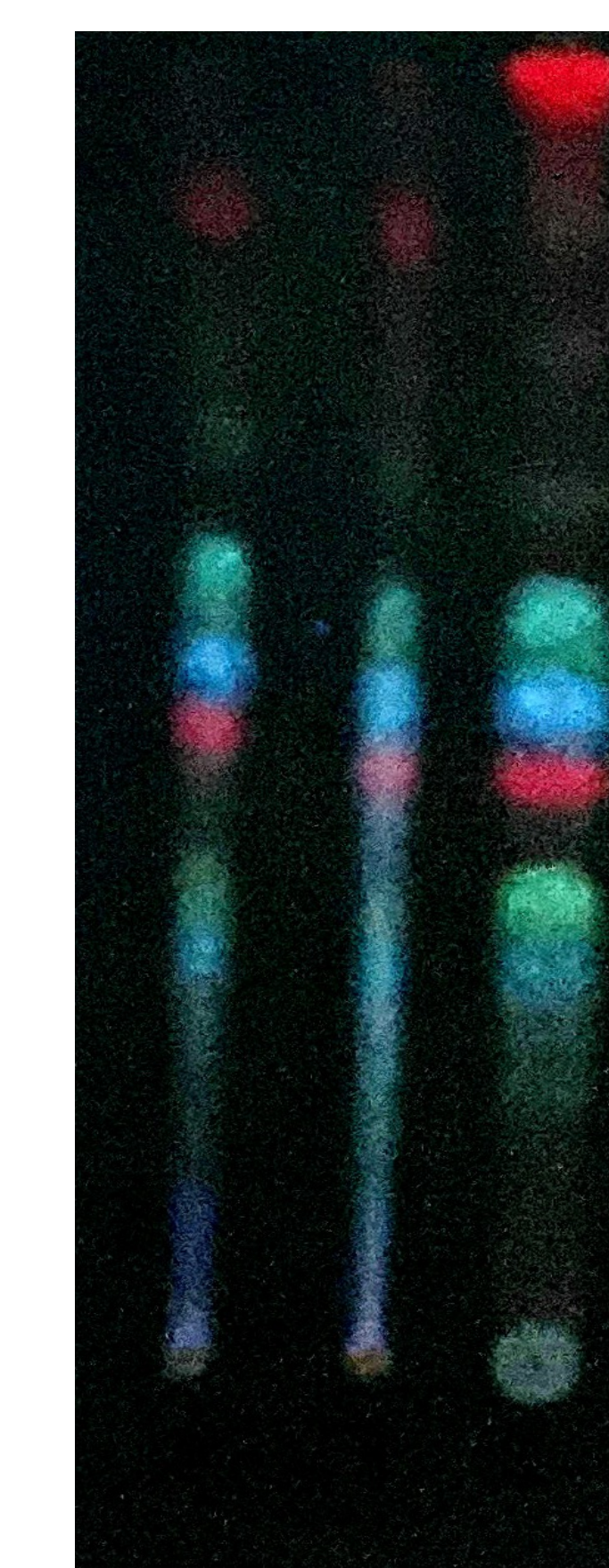
## Results of microbial control:

Experiments	“ <i>Qurs-e-Vard</i> ”	“ <i>Qurs-e-Zereshk</i> ”	Standard limits
Total bacterial count (cfu)	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>
<i>Salmonella</i> in gram	N.D.	N.D.	N.D.
<i>Pseudomonas aeruginosa</i> in gram	N.D.	N.D.	N.D.
<i>E.coli</i> in gram	N.D.	N.D.	N.D.

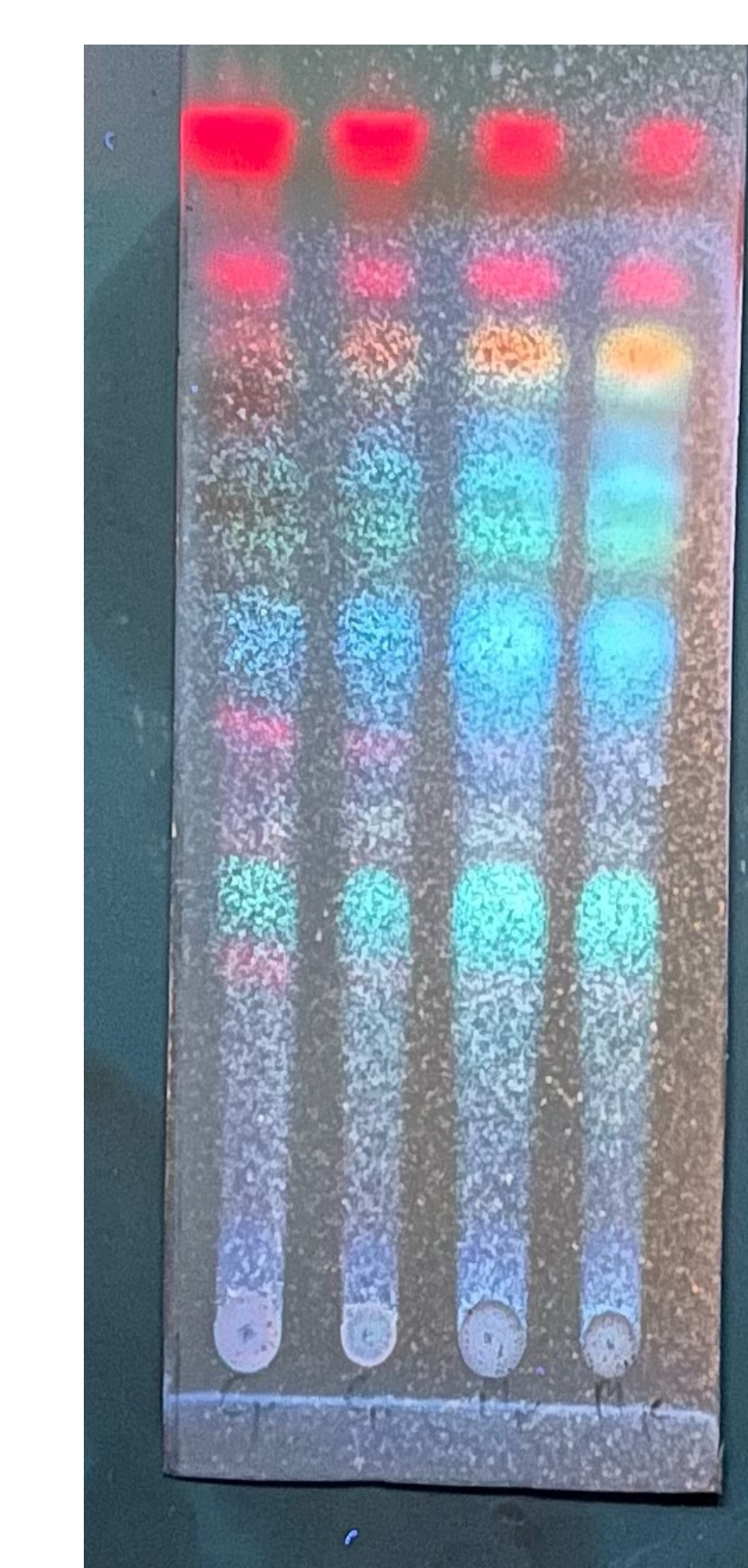
## Results of antioxidant assays:

Formulations	IC <sub>50</sub> [µg/ml] DPPH Scavenging Activity ± SD	NO Scavenging [%] [200 µg/ml] ± SD	FRAP Value [µg/ml] ± SD
“ <i>Qurs-e-Vard</i> ”	88.14 ± 1.15	59.11 ± 2.15	255.24 ± 3.45
“ <i>Qurs-e-Zereshk</i> ”	1852.84 ± 13.91	61.72 ± 1.79	1003.14 ± 5.19
Quercetin	78.97 ± 0.25	55.08 ± 2.34	16.11 ± 0.45

## TLC fingerprinting:



“*Qurs-e-Vard*”



“*Qurs-e-Zereshk*”

## Conclusion:

The antioxidant activity may be attributed to the inhibition of radical formation or the scavenging of formed radicals, as well as the presence of phenolic compounds.

These findings have demonstrated that “*Qurs-e-Vard*” and “*Qurs-e-Zereshk*” possess noteworthy antioxidant properties.

Consequently, these results validate the potential medicinal value of the plants utilized in traditional medicine systems and warrant further comprehensive investigations into the constituents of this formulation to confirm their use in polyherbal formulations recommended for liver dysfunctions.

It is highly recommended that future studies encompass the evaluation of cell signaling pathways, enzymatic and non-enzymatic antioxidant activities, anti-inflammatory responses, anti-apoptotic mechanisms, modulation of dyslipidemia, and regulation of liver enzymes.

Moreover, preclinical and clinical evaluations are imperative to substantiate the hepatoprotective effects of “*Qurs-e-Zereshk*” and “*Qurs-e-Vard*”.



## Preparation of “*Qurs-e-Vard*” and “*Qurs-e-Zereshk*”:



Pharmaceutical features of tablets.

Tablets	Tablet Weight [g] ± SD	Diameter [mm] ± SD	Thickness ± SD
3 intervals per day	10 ± 0.35	27 ± 0.46	14 ± 0.26
Single dose	30 ± 0.65	50 ± 0.89	10 ± 0.17



## References

1. Yazdani, E.; Talebi, M.; Zarshenas, M. M.; Moein, M., Evaluation of possible antioxidant activities of barberry solid formulation, a selected formulation from Traditional Persian Medicine (TPM) via various procedures. *Biointerface Research in Applied Chemistry* 2019, 9 (6), 4517-4521.
2. Talebi, M., Zarshenas, M., Yazdani, E., & Moein, M. Preparation and Evaluation of Possible Antioxidant Activities of Rose Traditional Tablet “*Qurs-e-Vard*” A Selected Traditional Persian Medicine (TPM) Formulation via Various Procedures. *Current Drug Discovery Technologies*. 2021, 18(5), 9-16.