

BRINE SHRIMP LETHALITY BIOASSAY OF *GLAUCIUM GRANDIFLORUM* VAR. *GRANDIFLORUM*

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S U M M A R Y

Alkaloidal extracts of the aerial parts of the samples of *Glaucium grandiflorum* Boiss. et Huet var. *grandiflorum* collected from three different parts of Turkey and their major alkaloids allocryptopine, protopine, (+)-isocorydine, (+)-corydine were screened for their cytotoxicity using brine shrimp lethality test. All the samples of *Glaucium grandiflorum* var. *grandiflorum* displayed significant cytotoxic activity. Allocryptopine, protopine, (+)-isocorydine, (+)-corydine showed potent activity with LC₅₀ values 15.92, 37.51, 237.24, 75.95, respectively.

Ö Z E T

Türkiye'nin 3 farklı bölgesinden toplanan *Glaucium grandiflorum* Boiss. et Huet var. *grandiflorum* örneklerinin toprak üstü kısımlarından elde edilen alkaloid ekstraktleri ve bu ekstraktlerden elde edilen major alkaloidler allokriptopin, protopin, (+)-izokoridin, (+)-koridin üzerinde brine shrimp lethality testi yapılarak sitotoksiteleri incelenmiştir. *Glaucium grandiflorum* var. *grandiflorum* türünün 3 örneği de önemli oranda sitotoksik

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aktivite göstermiştir. Allokriptopin, protopin, (+)-izokoridin, (+)-koridin sırasıyla 15.92, 37.51, 237.24, 75.95 LC_{50} değerleri ile kuvvetli sitotoksik aktivite göstermiştir.

Keywords: Brine shrimp lethality test; *Glaucium grandiflorum* var. *grandiflorum*; Allocryptopine; Protopine; (+)-Isocorydine; (+)-Corydine

I N T R O D U C T I O N

The fruits of *Glaucium grandiflorum* have been used as folk medicine in Turkey for the purification of blood and in the treatment of ophthalmic diseases (1). It is also reported that the sap of this plant is being used widely in Iraq for the same purposes (2). Previous studies on the alkaloids of Turkish *Glaucium grandiflorum* var. *grandiflorum* have been shown on the Table II (3, 4). In this study, alkaloidal extracts and the major alkaloids of the aerial parts of the samples of *Glaucium grandiflorum* Boiss. et Huet var. *grandiflorum* collected from three different parts of Turkey were screened for cytotoxic activity using brine shrimp lethality test.

R E S U L T S A N D D I S C U S S I O N

Alkaloidal extracts of the aerial parts of the samples of *Glaucium grandiflorum* var. *grandiflorum* collected from three different parts of Turkey and their major alkaloids were screened for cytotoxic activity using brine shrimp lethality test. All the extracts showed significant lethality to brine shrimp. Allocryptopine, protopine, (+)-isocorydine, (+)-corydine showed potent cytotoxic activity. The results are reported in Table III.

E X P E R I M E N T A L

Glaucium grandiflorum var. *grandiflorum* were collected from three different parts of Turkey. Voucher specimens (G_I-G_{III}) were deposited in the herbarium of the Faculty of Pharmacy of Istanbul University (ISTE). See Table I.

The dried and powdered aerial parts were extracted by percolation with EtOH and then alkaloidal extracts were obtained following the reported methods (5). Yields on dried weight: % 0.55, % 0.68, % 0.54, respectively. Alkaloidal extracts and the major alkaloids were screened for cytotoxic activity using *Artemia salina* (brine shrimp) (6). The control used for comparison was berberine chloride.

Table I: Locality of the samples of *Glaucium grandiflorum* var. *grandiflorum*

Sample	Locality	Date	ISTE Number
G-I	Erzincan	June 1995	68132
G-II	Sivas	June 1995	68159
G-III	Bolu	July 1997	74322

Table II: Previously isolated alkaloids of Turkish *Glaucium grandiflorum* var. *grandiflorum*

Alkaloid type	Alkaloid	G-I	G- II	G- III
Benzyloquinoline	Berbithine	+		
	(+)-Reticuline	+		
Protoberberine	(-)- α -N-Methylcanadine	+		
	(-)- β -N-Methylcanadine	+	+	
Protopine	Allocriptopine	+	+	
	Protopine	+	+	+
Aporphine	(+)-Corydine			+
	(+)-Isocorydine		+	+
	(+)-Isocorytuberine			+

Table III: Brine shrimp lethality of the alkaloidal extracts and major alkaloids of *Glaucium grandiflorum* var. *grandiflorum*

Tested material	ppm	LC ₅₀
G-I	1000:100:10	15.38
G-II	1000:100:10	18
G-III	500:50:5	43.37
Alloclryptopine	250:25:2.5	15.92
Protopine	400:40:4	37.51
(+)-Isocorydine	1000:100:10	237.24
(+)-Corydine	1000:100:10	75.95
Berberine chloride ^a	500:50:5	9.74

^aPositive control

R E F E R E N C E S

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