

Effect of Using Extracts of Mugwort, Chicken, Lupine Seeds and Licorice as Partial Replacement of Dormex on Berry Setting, Shot Berries and Berries Quality of Superior Grapevines Grown Under Qena Conditions

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Abstract: This study was conducted during 2015 and 2016 seasons to examine the effect of using four plant extracts (mugwort, chicken, lupine seeds and licorice) each at 10% as partial replacement of dormex on berry setting, yield, shot berries and berries quality of Superior grapevines grown under Qena region. The vines treated with dormex and plant extracts once on 11 & 12 Jan during both seasons. An obvious promotion on berry setting%, yield/vine and berries quality and a remarkable reduction on shot berries% were observed due to treating the vines once to dormex at 4% alone and dormex at 1 to 2% and/or any one of the four plant extracts namely mugwort, chicken, lupine seeds and licorice each at 10% compared to the control. The best plant extracts in this respect were extracts of mugwort, chicken, lupine seeds and licorice each at 10%, in ascending order. Using dormex at 1 to 2% plus any one of the four plant extracts were favourable than using dormex at 1 to 2% alone in enhancing yield and berries quality. One application of dormex at 4% alone or dormex at 2% plus extract of licorice at 10%. Was responsible for producing higher yield and better berries quality of Superior grapevines grown under Qena region.

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Keywords: Dormex, mugwort, chicken, lupine seeds, licorice, berry setting, yield, shot berries, berries quality, Superior grapevines.

1. Introduction

The increasingly demand for organic fruits as well as the premium prices had motivated farmers to convert from traditional agriculture to organic farming. Taking into account the reduction or elimination of the use of synthetic substances the search for new alternatives for breaking dormancy of grapevines it is becoming very important.

Nowadays, many attempts were accomplished to eliminate the using of synthetic substances throughout agricultural practices for improving yield and fruit quality. Using natural plant extracts were the new alternative compounds for improving yield and fruit quality of fruit orchards as safety agents for human and environment.

However, the use of natural products in horticultural practice instead of other synthetic chemical products is becoming a main target for many fruit crop producers, where, the world market has been growing rapidly in recent years for organic fruit production (Dimitri and Oberholtzer, 2006).

Using natural rest breakages as replacement of chemical ones in sustainable agriculture system for breaking dormancy and promoting yield and quality of the berries in different grapevines cvs. was reviewed by many authors (Abdalla, 2007; Botelho *et al.*, 2010; Corrales- Maldonado *et al.*, 2010;

Eshghi *et al.*, 2010; Ahmed *et al.*, 2014; Osman, 2014; Ebrahim-Rehab, 2016; Carvalho *et al.*, 2016 and El- Saman, 2017).

The target of this study was examining the effect of using four plant extracts (mugwort, chicken, lupine seeds and licorice) as partial replacement of dormex on berry setting%, yield and berries quality of Superior grapevines grown under Qena region.

2. Materials and Methods

This study was carried out during the two consecutive seasons of 2015 and 2016 on ninety-six uniform in vigour 10-years old Superior grapevines grown in a private vineyard located at El-Makhatma Village, Qena district, Qena Governorate where the soil texture is clay and well drained water since water table depth is not less than two meters (Table 1). The chosen vines are planted at 2 x 3 meters apart. Cane pruning system was followed at the first week of Jan. leaving 84 eyes per vine (on the basis of six fruiting canes x 12 eyes plus six renewal spurs x two eyes) with the assistance of Gabel shape supporting system. The vines were irrigated through drip irrigation system using Nile water.

The goal of this study was examining the impact of some natural and chemical rest breakages on behavior of buds, growth aspects, leaf chemical

components and fruiting of Superior grapevines grown under Qena region conditions.

Soil analysis was done according to **Piper, (1950) and Wilde *et al.*, (1985)** and the obtained data are shown in Table (1).

Table (1): Analysis of the tested soil

Constituents	values
Particle size distribution	
Sand %	5.0
Slit %	20.0
Clay %	75.0
Texture %	Clay
pH (1:2.5 extract)	7.7
O.M. %	2.50
CaCO ₃ %	1.92
Total N%	0.10
Available P (Olsen method, ppm)	6.3
Available K (ammonium acetate, ppm)	490
EDTA extractable micronutrients (ppm):	
Zn	2.2
Fe	2.4
Mn	2.5

All the chosen vines received regular and horticultural practices that already applied in the vineyard except those dealing with the application of natural and chemical rest breakages. These practices included hoeing, pest control management, irrigation and fertilization with 20m³ farmyard manure (0.3% N, 0.4% P₂O₅ and 1.2% K₂O), 200 kg ammonium sulphate (20.6% N), 250 kg calcium triple superphosphate (37.5% P₂O₅) and 250 kg potassium sulphate (48% K₂O). Farmyard manure was added once at the first week of Jan. in both seasons. Ammonium sulphate was added at four unequal batches 30% at the first week of Feb. 10% at the first week of Mar. 30% at the first week of Apr. 20% at one month later (1st week of May) and 10% after harvesting. Phosphate fertilizer was added twice at two equal batches, the first with farmyard manure and the second at the first week of Mar. Potassium fertilizer was applied at two equal batches, the first at the first week of Feb. and the second at the first week of Apr.

This study consisted from the following sixteen treatments from natural and chemical rest breakages:

- 1- Control (which vines were sprayed with water only).
- 2- Spraying mugwort extract at 10 %
- 3- Spraying chicken extract at 10 %
- 4- spraying lupine seed extract at 10 %
- 5- Spraying licorice at 10 %
- 6- Spraying dormex at 1 %
- 7- Spraying dormex at 1 % + mugwort extract at 10 %

8- Spraying dormex at 1 % + chicken extract at 10 %

9- Spraying dormex at 1 % + lupine seed extract at 10 %

10- Dormex at 1 % + licorice at 10 %

11- Spraying dormex at 2 %

12- Spraying dormex at 2 % + mugwort extract at 10 %

13- Spraying dormex at 2 % + chicken extract at 10 %

14- Spraying dormex at 2 % + lupine seed extract at 10 %

15- Spraying dormex at 2 % + licorice at 10 %

16- Spraying dormex at 4 %

Each treatment was replicated three times, two vines per each. Dormex and the four plant extracts were sprayed once (11th and 12th Jan.) when the vines received 125 and 130 chilling hours at equal or below 7.2 °C during both seasons, respectively in the periods from Nov. 1st till dates of spraying (11th or 12th Jan.). These accumulated chilling hours (125 or 130) at equal or below 7.2 °C were calculated by using temperature data obtain by Luxor airport Meteorological station.

Table (2): Chemical composition of mugwort (% or dry weight basis) (according to Wright, 2002)

Components	Values
N %	1.61
P %	0.22
K %	1.00
Mg %	0.59
Ca %	0.22
Active ingredient (Mg/100 g dry weight)	
a- thujone	20
Camphor	29
b- thujone	61
Artemisia Ketone	64
Borneol acetate	71
Bornyl acetate	21
Cineole	39

Table (3): Chemical composition of chicken (%) (according to Ekor, 2014).

Components	Values
N %	1.11
P %	0.25
K %	1.00
Mg %	0.41
Glycosides %	4.11
Argline %	1.10
Total flavonoids%	5.11
Campheral %	1.11
Total tannins %	2.59
Cardinols %	1.09
Beta citocitrol %	0.60
Alpha silica %	0.30
Beta silica %	0.28

Table (4): Chemical composition of lupine (% or dry weight basis) (according to Lampart *et al.*, 2003)

Components	Values
N %	4.8
P %	0.5
K %	1.5
Mg %	0.5
Proteins %	30.0
Tannins %	2.0
Amino acids (mg/100 g dry weight)	
Leucine	20.5
Tyrosine	23.0
Cysteine	30.0
Phenyl alanine	34.0
Fatty acids (mg/100 g dry weight)	
Oleic	23.3
Linoleic	25.0
Linolenic	27.0
Palmitic	29.0
Stearic acid	31.0
Vitamins	195.9

Table (5): Chemical composition of licorice (% or dry weight basis) (according to Fenwickie *et al.*, 1990).

Components	Values
Ash %	5.42
Protein %	7.97
Crude fiber %	37.6
Moisture %	9.04
(Mg/100 g dry weight)	
Mg	174.7
Zn	0.4
Mn	0.4
Fe	1.19
Ca	104.55
K	341.5
Cu	0.18
Total phenols	405.2
Total flavonoids	114.91
Total tannins	47.54
Total saponius	27.99
Total carotenoids	11.78
Vitamin C	1.20
Polyphenols and flavonoids (Mg/ g dry weight)	
Resrocnol	9.22
Protocatechaic acid	11.5
Benzoic acid	14.4
Phenol	18.4
Vanillin	20.43
P-coumaric	21.67
Ferulic acid	22.84
Myrcetin	27.62
Cinnamic acid	31.22
Apignin	29.97
Kaempferol	32.95

Triton B as a wetting agent at 0.05% was added to all chemical and natural rest breakages before application and the buds were received solutions till runoff (0.25 L/vine).

Chemical composition of four oils (mugwort, chicken, licorice and lupine extracts are shown in Tables (2 to 5).

The experimental design was randomized complete block with sixteen treatments, with three replicates, two vines per each.

During both seasons, the following parameters were recorded:

1- Percentage of berry setting.
2- Harvesting date was recorded when T.S.S./acid reached 25: 1 in the juice of all treatments according to (Weaver,1976 and Bacha, 1984).

3- Yield/vine expressed in weight (kg.) and number of clusters/vine as well as weight (g.), length and shoulder of cluster (cm).

4- Percentage of shot berries.

5- Physical and chemical characteristics of the berries namely berry weight (g) and dimensions (longitudinal and equatorial) (cm), total soluble solids%, total acidity% expressed as tartaric acid (A.O.A.C., 2000), T.S.S.%, T.S.S./acid and reducing sugars% (Lane and Eynon, 1965).

Statistical analysis was done and different treatment means were compared using new L.S.D. at 5% (Mead *et al.*, 1993 and Rao, 2007).

3. Results

1. Berry setting:

Percentage of berry setting was significantly improved in response to treating the vines once with dormex at 4% alone and dormex at 1 to 2% and/or any one of the four plant extracts (mugwort, chicken, lupine seeds and licorice) rather than non-application as shown in Table (6). It was gradual increased with increasing concentrations of dormex. The promotive effects of these natural plants on berry setting could be arranged as follows, in ascending order mugwort, chicken, lupine seeds and licorice each at 10%. Using dormex at 1 to 2% and/or any one of the four plant extracts (mugwort, chicken, lupine seeds and licorice) had significantly promotion on the percentage of berry setting relative to the use of dormex at 1 to 2% alone. The best berry setting % (16.3 & 16.2%) was recorded on the vines that received dormex at 4% alone during 2015 & 2016 seasons, respectively. The application of dormex at 2% plus extract of licorice at 10% occupied the second position in this respect. Berry setting % in the previous treatment reached 16% during both seasons. The percentage of berry setting in the untreated vines reached 9.1 & 8.7% during 2015 &

2016 seasons, respectively. These results were true during both seasons.

2. Harvesting date:

Data in Table (6) recorded that harvesting date of superior grapevines were greatly varied among the sixteen dormex and plant extract treatments. A great advancement on harvesting date was observed when the vines treated with dormex at 4% alone as well as dormex at 1 to 2% and/or any one of the four plant extracts (mugwort, chicken, lupine seeds and licorice) relative to the control. The enhancement in harvesting date was related to the increase in concentrations of dormex as well as application of mugwort, chicken, lupine seeds and licorice each at 10%, in ascending order. An obvious and remarkable promotion was observed on harvesting date when dormex at 1 to 2% was used with any one of the four plant extracts (mugwort, chicken, lupine seeds and licorice). Harvesting date was very earliest when the vines were treated with dormex at 4% alone. Under such promised treatment harvesting date was **8 and 7 June** during both seasons, respectively. Vines treated with dormex at 2% + extract of licorice at 10% harvest on **10 June** during 2015 & 2016 seasons. Harvesting date of the untreated vines was **30 June and 1 July** during both seasons, respectively. Similar trend was noticed during both seasons.

3. The yield/vine and cluster aspects:

It is noticed from the obtained data in Table (7) that treating the vines once with dormex at 4% alone

and dormex at 1 to 2% and/or any one of the four plant extracts namely mugwort, chicken, lupine seeds and licorice each at 10% significantly was superior in improving yield expressed in weight (kg) and number of clusters/vine and weight, length and shoulder of cluster than the check treatment. There was a gradual and significant promotion on the yield and cluster aspects with increasing in concentrations of dormex. The best plant extracts in improving yield and cluster aspects were mugwort, chicken, lupine seeds and licorice each at 10%, in ascending order. Using any plant extract with dormex at 1 to 2% significantly improved yield and cluster weight than using dormex at 1 to 2% alone. The maximum yield/vine (**9.2 & 13.6 kg**) was recorded on the vines that treated with dormex at 4% alone during both seasons, respectively. The vines sprayed with dormex at 2% + extract of licorice at 10% harvest gave yield reached **9.1 & 13.2 kg** during 2015 & 2016 seasons, respectively. The untreated vines produced yield reached **7.5 & 7.1 kg** during both seasons, respectively. Under shortage of dormex, it is possible to use extract of licorice at 10% with dormex at 2% for producing acceptable yield of Superior grapevines. Number of clusters per vine in the first season was unaffected by the present treatments. Similar trend was noticed during both seasons.

4. Percentage of shot berries:

Table (6): Effect of using extracts of Mugwort, Chicken, Lupine seed and Licorice as partial replacement of dormex on berry setting % and harvesting date of Superior grapevines grown under Qena conditions during 2015 and 2016 seasons

Treatments	Berry setting %		Harvesting date	
	2015	2016	2015	2016
Control	9.1	8.7	30June	1july
Mugwort extract at 10 %	9.6	9.0	27June	28june
Chicken extract at 10 %	10.1	9.3	24June	25june
Lupine seed extract at 10 %	10.7	9.6	21june	20june
Licorice at 10 %	11.5	10.0	21june	20june
Dormex at 1 %	12.1	10.4	20june	20june
Dormex at 1 % + Mugwort extract at 10 %	12.6	11.9	17june	16june
Dormex at 1 % + Chicken extract at 10 %	13.1	12.4	16june	15june
Dormex at 1 % + Lupine seed extract at 10 %	13.7	13.3	16june	14june
Dormex at 1 % + Licorice at 10 %	14.2	13.9	15june	13june
Dormex at 2 %	14.7	14.5	13june	13june
Dormex at 2 % + Mugwort extract at 10 %	15.2	15.0	12june	12june
Dormex at 2 % + Chicken extract at 10 %	15.3	15.4	12june	11june
Dormex at 2 % + Lupine seed extract at 10 %	15.4	15.8	11june	10june
Dormex at 2 % + Licorice at 10 %	16.0	16.0	11june	10june
Dormex at 4 %	16.3	16.2	10june	10june
NEW L.S.D at 5 %	0.5	0.3	----	----

Percentage of shot berries was significantly controlled by treating the vines once with dormex at 4% alone and dormex at 1 to 2% and/or any one of the four plant extracts namely mugwort, chicken, lupine seeds and licorice each at 10% relative to the check treatment as shown in Table (7). There was a gradual and significant reduction on the percentage of shot berries with increasing concentrations of dormex. The best plant extracts in controlling shot berries in the cluster were mugwort, chicken, lupine seeds and licorice each at 10%, in ascending order. A significant reduction on the percentage of shot berries was observed when the vines received dormex at 1 to 2% plus any one of the four plant extracts compared to using dormex at 1 to 2% alone. The lowest values of shot berries (**3.0 & 2.9 %**) were recorded on the vines that treated with dormex at 4% alone and those vines that treated with dormex at 2% + extract of licorice at 10%. The highest values of shot berries (**12.0 & 12.3 %**) were recorded on the untreated vines. These results were similar in both the two experimental seasons.

5. Physical and chemical characteristics of the berries:

It is clear from the obtained data in Table (8) that treating the vines once with dormex at 4% alone and dormex at 1 to 2% and/or any one of the four plant extracts namely mugwort, chicken, lupine seeds and licorice each at 10% was significantly very effective in improving quality of the berries in terms of berry weight and dimensions (longitudinal and equatorial), T.S.S%, T.S.S./acid and reducing sugars% and decreasing total acidity % relative to the check treatment. The promotion was significantly in proportional to the increase in concentrations of dormex. Using extracts of mugwort, chicken, lupine seeds and licorice each at 10%, in ascending order was very effective in enhancing berries quality. Using dormex at 1 to 2% and/or any one of the four plant extracts was significantly favourable in improving quality of the berries than using dormex at 1 to 2% alone. Using dormex at 4% gave the best results with regard to quality of the berries. Using dormex at 2% along with the extract of licorice at 10% occupied the second position in this respect. Unfavourable effects on berries quality were observed on untreated vines. These results were true during both seasons.

Table (7): Effect of using extracts of Mugwort, Chicken, Lupine seed and Licorice as partial replacement of dormex on yield per vine (kg), cluster weight and dimensions and shot berries% of Superior grapevines grown under Qena conditions during 2015 and 2016 seasons

Treatments	No. of clusters / vine		Yield/ vine (kg)		AV. Cluster weight (g)		AV. Cluster length (cm)		AV. Cluster shoulder (cm)		Shot berries%	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Control	22.0	21.0	7.5	7.1	341.0	339.0	14.6	14.1	10.1	10.0	12.0	12.3
Mugwort extract at 10 %	23.0	23.0	8.0	8.1	347.0	350.0	15.0	14.4	10.3	10.2	11.0	11.4
Chicken extract at 10 %	23.0	24.0	8.2	8.6	355.0	358.0	15.4	14.7	10.5	10.4	10.0	10.4
Lupine seed extract at 10 %	23.0	25.0	8.3	9.1	362.0	365.0	15.7	15.0	10.8	10.7	9.0	9.4
Licorice at 10 %	23.0	26.0	8.3	9.6	363.0	369.0	16.0	15.4	11.1	11.0	8.1	8.4
Dormex at 1 %	23.0	28.0	8.5	10.5	370.0	374.0	16.3	16.0	11.4	11.3	7.2	7.4
Dormex at 1 % + Mugwort extract at 10 %	23.0	29.0	8.5	10.9	371.0	375.0	16.6	16.4	11.6	11.5	6.2	6.3
Dormex at 1 % + Chicken extract at 10 %	23.0	29.0	8.7	11.1	378.0	383.0	17.0	16.9	11.9	12.0	6.0	5.9
Dormex at 1 % + Lupine seed extract at 10 %	23.0	29.0	8.7	11.2	380.0	386.0	17.3	17.1	12.1	12.0	5.0	4.9
Dormex at 1 % + Licorice at 10 %	23.0	31.0	8.8	12.1	381.0	390.0	17.6	17.4	12.4	12.3	4.1	3.9
Dormex at 2 %	23.0	32.0	9.0	12.7	391.0	397.0	18.0	17.9	12.6	12.5	4.0	3.8
Dormex at 2 % + Mugwort extract at 10 %	23.0	32.0	9.0	12.7	392.0	397.0	18.3	18.3	12.9	12.8	3.0	2.9
Dormex at 2 % + Chicken extract at 10 %	23.0	33.0	9.0	13.1	392.0	397.0	18.6	18.6	13.1	13.1	3.0	2.9
Dormex at 2 % + Lupine seed extract at 10 %	23.0	33.0	9.1	13.1	394.0	398.0	19.0	18.9	13.2	13.3	3.0	2.9
Dormex at 2 % + Licorice at 10 %	23.0	33.0	9.1	13.2	395.0	399.0	19.3	19.2	13.2	13.3	3.0	2.9
Dormex at 4 %	23.0	34.0	9.2	13.6	399.0	401.0	19.6	19.5	13.3	13.3	3.0	2.9
NEW L.S.D at 5 %	NS	0.2	0.4	0.4	5.1	6.0	0.3	0.3	0.2	0.3	0.9	1.0

Table (8): Effect of using extracts of Mugwort, Chicken, Lupine seed and Licorice as partial replacement of dormex on some physical and chemical characteristics of the berries of Superior grapevines grown under Qena conditions during 2015 and 2016 seasons

Treatments	AV. berry weight (g)		AV. berry longitudinal (cm)		AV. berry equatorial (cm)		T.S.S %		Reducing sugars %		Total acidity%		T.S.S/ acid	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Control	4.11	4.01	2.09	2.11	1.90	1.92	17.1	16.9	15.9	15.4	0.684	0.676	25.0	25.0
Mugwort extract at 10 %	4.22	4.12	2.14	2.16	1.94	1.95	17.4	17.3	16.1	15.7	0.671	0.666	25.9	26.0
Chicken extract at 10 %	4.32	4.21	2.20	2.21	2.00	1.99	17.7	17.6	16.4	16.0	0.660	0.655	26.8	26.9
Lupine seed extract at 10 %	4.41	4.31	2.24	2.26	2.04	2.03	18.0	17.9	16.7	16.4	0.649	0.644	27.7	27.8
Licorice at 10 %	4.52	4.42	2.28	2.32	2.08	2.06	18.3	18.2	17.0	16.8	0.639	0.632	28.6	28.8
Dormex at 1 %	4.64	4.63	2.32	2.37	2.12	2.10	18.6	18.5	17.2	17.2	0.629	0.630	29.6	29.4
Dormex at 1 % + Mugwort extract at 10 %	4.79	4.79	2.35	2.42	2.16	2.15	19.0	18.9	17.5	17.5	0.619	0.618	30.7	30.6
Dormex at 1 % + Chicken extract at 10 %	4.90	4.80	2.40	2.47	2.20	2.18	19.3	19.2	17.8	17.8	0.600	0.606	32.2	31.7
Dormex at 1 % + Lupine seed extract at 10 %	5.11	5.00	2.44	2.52	2.24	2.22	19.6	19.5	18.1	18.2	0.585	0.690	33.5	28.3
Dormex at 1 % + Licorice at 10 %	5.22	5.12	2.45	2.57	2.28	2.26	20.0	19.9	18.4	18.5	0.571	0.675	35.0	29.5
Dormex at 2 %	5.32	5.22	2.52	2.64	2.32	2.30	20.3	20.2	18.7	18.7	0.555	0.554	36.6	36.5
Dormex at 2 % + Mugwort extract at 10 %	5.44	5.34	2.53	2.66	2.33	2.32	20.6	20.5	19.0	19.0	0.541	0.540	38.1	38.0
Dormex at 2 % + Chicken extract at 10 %	5.53	5.44	2.53	2.67	2.33	2.33	21.0	20.9	19.3	19.3	0.531	0.530	39.5	39.4
Dormex at 2 % + Lupine seed extract at 10 %	5.62	5.54	2.53	2.67	2.33	2.33	21.3	21.2	19.6	19.6	0.521	0.518	40.9	40.9
Dormex at 2 % + Licorice at 10 %	5.71	5.64	2.54	2.68	2.33	2.33	21.6	21.6	19.8	20.0	0.511	0.506	42.3	42.7
Dormex at 4 %	5.80	5.77	2.55	2.69	2.34	2.34	21.9	22.0	19.9	20.3	0.500	0.490	43.8	44.9
NEW L.S.D at 5 %	0.09	0.10	0.04	0.05	0.03	0.03	0.3	0.3	0.2	0.3	0.009	0.010	0.8	0.7

4. Discussion

The positive action of chemical rest breakages on breaking dormancy and improving productivity of Superior grapevines might be attributed to one or more the following reasons (Pinto *et al.*, 2007; Grappa and Benvides, 2008 and Dong-Mei *et al.*, 2011):

- 1- Removing bud scales.
- 2- Increasing free water, IAA, GA₃, cytokines, soluble sugars, amino acids, total indoles, oxidative process, peroxidase, H₂O₂ and polyamines.
- 3- Reducing ABA, total phenols, catalase enzyme and glutathione.
- 4- Changing respiratory key enzymes activities such as phosphohexase isomerase, acidehydrogenase and glucose-6- phosphate dehydrogenase in favour of termination of bud dormancy.
- 5- Changes the balance between promoters (IAA, GA₃ and cytokinins) and inhibitors (ABA) in

favour of termination of rest as well as gen expression.

These results are in agreement with those obtained by Abdalla, (2007); Ahmed *et al.*, (2014); Osman, (2014); Carvalho *et al.*, (2016) and Ebrahim-Rehab (2016).

The promoting effect of these plant extracts on the biosynthesis of GA₃ could result in enhancing bud breaking suggested that water and nutrients may be also be mobilized to the growing points. The transition of buds from the dormant stage to the bursting process is related to an increase in the water content in the tissues, mobilization of nutrients and activation of hydrolytic enzymes and intensification of respiration Kubota *et al.*, (2000).

The present effect of plant extracts on ending dormancy and improving the yield and quality of the barriers in Superior grapes cv. was supported by the results of Abdalla, (2007; Botelho *et al.*, (2010);

Corrales- Maldonado *et al.*, (2010); Eshghi *et al.*, (2010); Ahmed *et al.*, (2014); Osman, (2014); Carvalho *et al.*, (2016) Ebrahim-Rehab, (2016) and El- Saman, (2017).

5. Conclusion

One application of dormex at 4% alone or dormex at 2% plus extract of licorice at 10%. Was responsible for producing higher yield and better berries quality of Superior grapevines grown under Qena region.

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