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# Amelioration Some Characters of Local Musk Melon by antherculture

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**Abstract:** We use the anthers of two types of the local musk melon,(long shape & round shape). Regarding the two types, were isolated in three phases (three days before the flower bud opening, one day before the flower bud opening and the opening day of the flower bud). These anthers were planted on food solution of (Murashige et Skoog), by adding (BA-BAP-KIN-2,4-D-NAA) in different solution concentrations,

- Difference results in hormone's sort and concentration and it's relation time tobud's age of flowering stages and producing callus in different stages between (0-100)% with the sort and hormone concentration or flowering stage.

– using (2,4-D,BA) on taken anthers from the three periods of flowering produce 100%callus in most concentrations for both types.

– using (2,4-D,Bap) on taken anthers from the first period of flowering produce 100 %callus in most concentrations for both types.

– using( KIN,NAA ) on taken anthers from the first period of flowering produce 100%callus in most concentrations for both types.

–Exposed anthers to hormone shock by increasing hormone density before culture didn't produce vegetative growths during the different periods of flowering.

## Introduction

Syrian yellow mellon characterizes with important characteristics as shape, colore and large size of fruits, these characterizes are desirable to people. Anther culture is the the newest ways for producing (pure races) by using anthers on nutrition solutions to have plants with monoploid when doubled we got (pure races) and with this method we reduce the time and work for speeding plant breeding[1].

The embryo planting affected with: contents of the nutrition solutions[2], type and concentration of growth regulators[3], heat as one of the natural environmental factors[4], source and concentration of the used carbohydrate[5]. The age of the embryo affects when we want to have complete plants[6].

## Materials & Methods

1-Plant material: the experiment was carried out on two types of the local yellow melon (long shape & round shape).

2- Anther culture: - Age of male flowers for the two types.

We took three appropriate stages of flowering for invitro culture with simple different periods that separate between the date of the three samples:

-three days before the flower bud opening (the first phase)
-one day before the flower bud opening(the second phase)
-the opening day of the flower bud (the third phase)

After preparing nutrition solutions, anther were planted and stored in room temperature (22±2)ºC and humidity70%and light 16 hour a day with intensity 500 lux .

The used solution (Murashige et skoog) contains major and micro-elements, vitamins, organic elements, hormones(auxins-cytokinins) in addition to agar (8) g/l to give solid texture. Some hormones were added to (Murashige et skoog) solution (mg/l) shown in table ( 1)

**Table (1) Hormones used**

| Hormone | (Mg/L(Concentration |
|---|---|
| kin<br>2,4-D | 0.3-0.5-1–1.2-1.5<br>0.1-0.3-0.5- 0.7-1 |
| BA<br>2,4-D | 0.1-0.3-0.5- 0.7-1<br>1–1.2- 1.5-1.7-2 |
| BAP<br>NAA | 0.3-0.5-1-1.2-1.5<br>0.1-0.5-1-1.2-1.5 |

## Results& discussion

The percentage of the gotten growths depending on the type and concentration of the used hormone (Table 2, Table 3, Table 4)

**Table(2) the percentage of anthers forming callus by using (NAA-BAP)**

| | | | percentage(% ) | | | | | |
|---|---|---|---|---|---|---|---|---|
| hormone | Concentration ( mg/l ) | Number of planted anthers | long shape | | | round shape | | |
| | | | first phase | second phase | third phase | first phase | second phase | third phase |
| BAP | 0.3 | 4 | 100% | 100% | 0 | 92% | 50% | 75% |
| NAA | 0.1 | | | | | | | |
| BAP | 0.5 | 4 | 83% | 100% | 0 | 100% | 100% | 0 |
| NAA | 0.5 | | | | | | | |
| BAP | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| NAA | 1 | | | | | | | |
| BAP | 1.2 | 4 | 50% | 75% | 100% | 75% | 75% | 100% |
| NAA | 1.2 | | | | | | | |
| BAP | 1.5 | 4 | 0 | ؟25% | 100% | 0 | 100% | 0 |
| NAA | 1.5 | | | | | | | |

Using(BAP-NAA) at (1.5 - 1.2) mg / l forms 100%callus in third period of flowering in the (long shape).In the( round shape) the percentage was 100% in second and third period of flowering, Using BAP at (0.5 mg/l)and NAA(0.5 mg/l) form100% callus in second period of flowering in the (long shape)and formed 100%callus in first and second period of flowering in the (round shape), BAP(0.3mg/l) and NAA (0.1mg/l) formed 100%callus in first and second period of flowering in the (long shape)only.

**(KIN-2,4-D )Table(3) shows the percentage of anthers forming callus by using**

| | | | **percentage(% )** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **hormone** | **Concentration ( mg/l )** | **Number of planted anthers** | **long shape** | | | **round shape** | | |
| | | | **first phase** | **second phase** | **third phase** | **first phase** | **second phase** | **third phase** |
| 2,4-D | 0.3 | 4 | 0 | 100% | 100% | 0 | 100% | 100% |
| KIN | 0.1 | | | | | | | |
| 2,4-D | 0.5 | 4 | 0 | 0 | 100% | 0 | 0 | 100% |
| KIN | 0.3 | | | | | | | |
| 2,4-D | 1 | 4 | 0 | 0 | 100% | 0 | 0 | 100% |
| KIN | 0.5 | | | | | | | |
| 2,4-D | 1.2 | 4 | 0 | 0 | 100% | 0 | 0 | 100% |
| KIN | 0.7 | | | | | | | |
| 2,4-D | 1.5 | 4 | 100% | 0 | 100% | 100% | 0 | 100% |
| KIN | 1 | | | | | | | |

In table (3) the Using of (KIN - 2, 4-D) at (0.3-1)mg/l formed 100%callus only in second and third period of flowering in both types, but using KIN at (0.5-1-1.2)mg/l and 2,4-D at (0.3-0.5-0.7)mg/l made 100% callus in third period of flowering in both types .

**(BA - 2,4-D)Table(4) shows the percentage of anthers forming callus by using**

| | | | percentage(% ) | | | | | |
|---|---|---|---|---|---|---|---|---|
| **hormone** | **Concentration ( mg/l )** | **Number of planted anthers** | **long shape** | | | **round shape** | | |
| | | | **first phase** | **second phase** | **third phase** | **first phase** | **second phase** | **third phase** |
| BA | 0.1 | 4 | 0 | 100% | 0 | 0 | 100% | 0 |
| 2,4-D | 1 | | | | | | | |
| BA | 0.3 | 4 | 100% | 100% | 100% | 100% | 100% | 100% |
| 2,4-D | 1.2 | | | | | | | |
| BA | 0.5 | 4 | 100% | 100% | 100% | 100% | 100% | 100% |
| 2,4-D | 1.5 | | | | | | | |
| BA | 0.7 | 4 | 100% | 100% | 100% | 100% | 100% | 100% |
| 2,4-D | 1.7 | | | | | | | |
| BA | 1 | 4 | 50% | 0 | 100% | 50% | 0 | 100% |
| 2,4-D | 2 | | | | | | | |

In table (4) BA at (0.3-0.5-0.7) mg/l and 2,4-D at (1.7-1.5-1.2) mg/l made 100% callus from threeperiods of flowering but using the same hormonesat (1-0.1)mg/l for (2,4-D–BA) didn't make callus in first and third period of flowering in both types.

## Conclusion

We found that using( BAP-NAA) at 1 mg/l for both hormones didn’t make callus in three periods of the two types, using BA at (0.5-0.3-0.7) mg/l and 2,4-D at ( 1.7-1.5-1.2) mg/l made callus 100% for both types, callus was unsimilar cells structure with pure white color, and soft texture.

The experiments still continued till we get vegetative growths or adventitious embryos. this proves that invitro culture affected with: contents of the nutrition solutions]7[, type and concentrate of growth regulators]8[.

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