5. SUMMARY AND CONCLUSION

The present study aims to evaluate the importance of carrot roots (*Daucus carota. L*) and garlic cloves *(Allium sativum .L*) plants as a tropical one recently cultivated in Egypt. Therefore, it is important to study the chemical and biochemical structure of carrot roots (*Daucus carota. L*) and garlic cloves *(Allium sativum .L*). Also, extraction of catalase and peroxidase enzymes from carrot roots and garlic cloves and evaluation properties and kinetics parameters of the enzymes extracts were carried out.

The chemical determinations included contents of moisture, ash, crude protein, total lipids, crude fiber, total carbohydrates, reducing sugar, non -reducing sugar, total carotenoids, ascorbic acid, total phenols and flavonoids Also, the mineral content of carrot roots(*Daucus carota. L*) and garlic cloves*(Allium sativum .L*) were determined. The results of carrot roots and garlic cloves indicated that the moisture content was found to be (87.4. and 59 %), ash (1.11and 7.21%), crude protein (1.00 and 7.52%), total lipids (0.53and 0.36%) , crud fiber (1.63 and 1.04%) , total carbohydrates (8.33 and 24.87%), reducing sugar (2.11and 0.75%) , non- reducing sugar (1.13and 1.64%), total carotenoids (5.06and 8.29mg/100g), ascorbic acid (8.13and 31mg/100g),respectively. The minerals included the macro minerals K(220.06 and 404.00),P(51.88and 18.54),Na (39.12 and 4.11), Ca (32.15 and 35.56)and Mg (7.20 and 3.93). and micro minerals Fe (2.10 and 8.51),Mn(1.43 and 0.001)and Cu,Zn and Pb not reported.

The results showed that (0.127 and 0.25 mg/g),(157 and 33.14 mg GAE/g) extracts,(40.11and 4.03 mg QE/g) extracts and (80.21and 61.06%), respectively.

The results showed that some phenolic compounds from the ethanolic extract from carrot roots (*Dacus carota L.*) were Pyrogallol (237.51 mg/100g), Catechin (162.01 mg/100g), *P*-hydroxy-benzoicacid (44.78 mg/100g), Caffeine(44.00mg/100g), Catechol (41.44 mg/100g), Protocatchuic (37.70 mg/100g), Chlorogenic acid (35.74 mg/100g), Salycillic (28.19 mg/100g),Benzoic acid (27.32 mg/100g) and Vanillic acid (20.01 mg/100g). Also, the results showed that some flavonoind compounds were identified as Hespridin (575.94mg/100g), Naringin (258.38 mg/100g), Rutin(81.51 mg/100g), Quercetrin (35.03 mg/100g),Luteolin-7-glucoside(34.80 mg/100g), APig.6-arbinose8-glactose (16.75mg/100g), Kamp.3, (2-P-comaroyl) glucose (16.14 mg/100g) and Acacetin neo. rutinoside (14.38mg/100g),respectivily.

On the other hand, some phenolic compounds from the ethanolic extract from garlic cloves (*Allium sativum*) were identified as salycillic acid (87.00 mg/100g), catechin (75.5 mg/100g) ,Benzioc acid (47.66 mg/100g),Pyrogallol (41.81mg/g) ,Ellagic (32.77 mg/100g) ,P-hydroxy-benzoic acid (17.61 mg/100g), Caffiene (13.39 mg/100g) and Coumarin (9.66 mg/100g). Also, the results showed that some flavonoind compounds from the ethanolic extract were estimated Hespirdin (268.80 mg/100g),Kamp.3,(2-P-comaroyl) glucose (254.81 mg/100g), Naringin(95.35 mg/100g), Acacetin neo.rutinoside (72.50 mg/100g), Luteolin 7-glucose (70.40 mg/100g),Rutin (42.70 mg/100g),Apig-6-rhamnose -8-glucoside (28.27 mg/100g),and Quercetrin(23.60 mg/100g),respectively.

The results showed that the activity and protein content of crude catalase and crude peroxidase enzymes from carrot roots (*Daucus carota. L*) were found to be (5.01and 91) U/ml ,(1.22 and 1.44)mg/ml, 4.10 and 63.19U/mg protein, respectively. On other hand, garlic cloves *(Allium sativum .L*)was found to be 2.05 and 204.4)U/ml , (4.2 and 5.11) mg/ml and 0.488and 40 U/ mg protein, respectively.

The enzymes (Catalase and peroxidase) extracted from carrot roots (*Daucus carota. L*) appeared the optimum pH and temperature 7.5, 6.5 and 60ºC, 55ºC, respectively. The K_m and V_{max} for catalase and peroxidase enzymes were equalled to 0.60, 0.22ml/100ml and 7.20, 6.00Units/ml/min, respectively.

The enzymes (Catalase and peroxidase)extracted from garlic cloves *(Allium sativum .L*) appeared the optimum pH and temperature 7.0, 5.5 and 40ºC, 50ºC, respectively. The K_m and V_{max} for catalase and peroxidase enzymes were equalled to1.88, 0.37ml/100ml and 6.43, 16.58Units/ml/min, respectively.

The obtained results indicated that calcium ions play as an activator at low concentration (up to 70 mg/ml for catalase enzyme and 50 mg/ml for peroxidase enzyme), beyond these concentration the reaction activity was decreased .Also, the accomplished results illustrated that cu^{+2} ions act as noncompetitive inhibitors at different concentration for both enzymes.

From the abovementioned accomplished results it has been recommended that the ability of application catalase and peroxidase enzymes extracted from carrot roots and garlic cloves as natural antioxidant resources and can be applied in the field of industry.

Also, it can be concluded that ethanolic extracted from carrot roots and garlic cloves contained some identified phenolic and flavonoid compounds which are considered as natural antioxidant resources, and anti-carcinogenic effects from the health point of view.