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"Study OF Glycemic Index In Various Dates In Libya (Barnsali,Tabouni and Dagla)"

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ABSTRACT:

Three samples of **date (Barnsali, Dagla and Tabouni)** were taken from the local market in Al-Zawiya City at the period from (1/11/2020) to (7/2/2021) to studying the effect of these types of dates on the glycemic index. Total sugar determinations for the three types of dates were carried out in industrial research center in Tajora, Tripoli, were as the following: 38.30% for Barnsali, 58.90% for Dagla and 45.30% for Tabouni. Then the effects of dates on blood sugar compared with standard glucose were done and the means where is the following: 65.00mg/100 ml for standard glucose, 73.07 mg/100 ml for Barnsali, 86.46 mg/100 ml for Dagla and 22.80 mg/100 for Tabouni. While, there were significant differences ($p<0.01$) between Dagla and Barnsali and also between standard glucose and Tabouni date. On the other hand the Dagla and Barnsali dates showed the highest values of blood sugar. As regard to glycemic index, the sample of Dagla date showed the highest mean (190.96 unit) following by the Barnsali sample (172.00 unit), while the Tabouni date was having the lowest mean (120.38 unit) between all the samples.

المستخلص : -

تم نقل ثلاثة عينات من التمور (برنســـلي، دقلة , طابوني) من الســـوق المحلية في مدينة الزاوية في الفترة من(2020/11/1) الى (2021/2/7) الدراسة تأثير هذه الأنواع من التمور على نسبة السكر في الدم. تم إجراء تقدير السكريات الكلية لأنواع الثلاثة في مركز البحوث الصـناعية في تاجوراء – طرابلس وكانت التقديرات على النحو التالي (للبرنسـلي 38.30 % ، دقلة 58.90 % و الطابوني 45.30 %), ثم تم تطبيق تأثير هذه النســب على نســب

سـكر الدم مقارنة بجلوكوز الدم القياسـي (65.00مليجرام /100 مل) جلوكوز القياسـي ، (73.07 ملغ / 100 مل) النسـبة للبارنسـالي، (86.46 ملغ / 100 مل) أي انه توجد هناك اختلافات معنوية ($P < 0.01$) بين تمور برنسلي و الطابوني و كذلك بين الجلوكوز القياسي و تمر دقلة .

من ناحية أخرى، أظهرت تمور دقلة و برنسلي أعلى قيم من نسبة السكر في الدم. فيما يتعلق بالمؤشر الجلاسمي للتمور ،أظهرت عينة تمر دقلة أعلى مستوى متوسط (190.96 وحدة) بعده عينة برنسلي (172.00 وحدة) , في حين تمر طابوني كان لديه أدنى متوسط (120.38 وحدة) بين كل العينات.

INTRODUCTION:

Dates are one of the oldest types of fruits grazed .The world , as the middle east was famous for thousands of years ago years ago years , and the fruits of dates are obtained from the trees .Date palm , and there are more than 2000 types of these fruits , foods are high in calories and comeback . This is because it contains sugar and carbohydrates , though . The fore , dates are an ideal meal for energy instantaneously , and it has a low glycemic index , that is it does not raise .The level of glucose in the blood is too high , so it will Diabetics can take it in moderation with a diet balanced**Sahari,et al 2007.** Dates contain a mixture of natural sugars therefore , it gives the body a mixture of energy however that it has a glycemic index (GI) rating glycemic of 36 , it means that dates are food low glycemic index in addition , it Contain many nutritional benefits of which it contains (magnesium , iron , copper , manganese , folate, vitamin B6 , vitamin K , potassium , antioxidant , phosphorous , vitamins that improve focus and enhance overall health brain work .The glycemic index is from the latestdiets that help the body in maintaining his health and protecting him from diseases in addition to help you lose weight naturally and is harmful if followed within a good diet , as he resorted to diabetics to rate the food eaten as one natural methods of controlling blood sugar level **Bastway, et al 2008.**The glycemic index is as system for determining a number of food containing carbohydrates according to the amount each food increase the level of sugar in the blood.No longer the glycemic index diet in itself a diet however is a different tool like calorie counting or calculating tools carbohydrates which are used to guide choices food**Vayalil, et al2002.**Data palm cultivation**:**The data palm (phoenix dactylifera L.) is one of mankind's oldest cultivated plants and has been used as food for about 6000 years it is an important food crop in middle East and is considered to be one of the most important fruit tree particularly in North African , the middle Eastern and Asian countries , The fruits

contributes to the economy and social life within these regions and it is considered as a vital component of their diet . Date fruits are well known a as staple nutritious food and source of wealth for many years .**Khan, et al 2008.**Because of its high nutritional value , great yields and its long life .The fruit of the date palms are consumed throughout the world . Dates are being consumed in modern culture for their pleasant flavor , odor and their biting texture in addition to their use for flavoring foods , beverages and medication .Data fruits are considered as major source of carbohydrate which include simple sugars like glucose and fructose and sourcethe are good source of dietary fiber and some important minerals which include contains vitamins C , B1 , B2 , A ,riboflavin and niacin but it is low in fat and protein contents . **Myhera, et al 1999.**The number of varieties of dates in the world is more than 2000 varieties, and each the region is famous for certain varieties, and some have moved other region over time retain their original names or new given, and there may be names in one area different for one class or the same name for two different classes in some areas you may find popular varieties while they are it is not popular in other regions, and the reason is different tastes and the residents' preference for varieties, dates according to the shape the taste, size, color and texture of the meat, as well as the influence of climate factors great influence on the date palm and its fruits, and therefore the characteristics of these changes varieties when the date palm is grown in different places from one place its original reproduction and presence.They can be consumed fresh in the Khalal and Rutab stages and command high prices if they are well preserved. Such requires special handling conditions (refrigeration/freezing, or heat treatment for ripening and drying) for increasing its shelf-life. The absence of the proper conditions increases the date fruit losses due to spoilage and decreases its value if they are not well processed.The efforts of some of the countries in tacking these problems, i.e. the introduction of mechanical pollination, the development of processing techniques for the preservation of the soft date varieties (microwave heating and drying as well as refrigeration and freezing) and the utilization of the unpollinated dates (pickling and ripening) are all well recognized and important steps in the right direction. However, more efforts are still needed in this respect, and the gradual replacement of the low quality varieties with more productive and demanded varieties like what is being currently done in few, but not most of the countries in the region, is essential.**Wajihet al (2000**).

Harvesting and ripeningSome high-quality dates are picked individually by hand , but most are harvested by cutting off the entire cluster . In North Africa , the harvesters climb the palms , use forked sticks or ropes to lower the fruit clusters, or they may pass the clusters carefully down from hand to hand. Growers in California and Saudi Arabia use various mechanized means to expedite harvesting saddles , extension ladders , or mobile steel towers with catwalks for pickers . All fruits in a cluster on a palm do not ripen at the same time . A number of picking may have to be made over a period of several weeks . In the Coachella Valley , dates ripen from late September through December and there are 6 to 8 pickings per palm **Mikkiet al 1999.**Stages of date palm developmentThe most important information that we must know are the stages dates that go through in their growth journey are as follows .Dates go through 4 stages of development Chimri , or Kimri stages , the first 17 weeks after pollination : green , hard , bitter , 80% moisture , 50% sugars (glucose and fructose) by dry weight . Khalal stage , the next 6 weeks : become full grown , still hard , color changes to yellow , orange or red , sugars increase, become largely sucrose .Rutab stage , the next 4 weeks : half-ripe ; soften , turn light brown and some sucrose reverts to reducing sugar .Tamar stage : ripe ; the last 2 weeks ;in soft dates , the sugar becomes mostly reducing sugar ; semi-dry and dry dates will have nearly 50% each of sucrose and reducing sugars. **GolshanTafti, et al (2006).**Geographical distribution of data palm in Libya The date palm cultivation spread in most Libya. The Agriculture area for this in crop is about 6010550 hectare in average 100 trees per hectare .**Wajihet al (2000).**

Date palm in costal regionThe favorable areas are located between 24˚ and 34˚N. The No. of date palm trees estimated about 71.000tree. Most of date varieties that have reasonable of yields harvest in Tamr and Rutub stages , reason for this is high relative humidity which ranged from 60% to 75% and it'srain for more 50 mm in autumn season . The most important varieties in this region are Bekrarye (60% from all trees), Tabuni (10%) and the rest (30%) for Bayodi , Helawi ,Brulsi and Nadory varieties .**Wajihet al (2000).**Classification of data varieties Data verities are classified according to the following Moisture content: The chemical properties of data are considered important in grading , preservation , storage and processing of dates. The high moisture content will facilitate spoilage of dates and low moisture content will lead to dry dates not acceptable to consumers .As the dates matured, the

moisture content fell to 54.83% at thekhalal stage, but at the rutab stage (20 weeks after pollination) had decreased to 33%. The least amount of moisture was observed at the tamar stage which was about 15% . There are about two thousand species in the Arab world, but mot .Those items do not quality to be the same commercial items Especially desirable specifications regarding productivity and quality fruits , and because the date palm lasts long , it may exceed its ago fifty years ago , the cultivation of varieties is not distinguished .With excellent specifications , it is a waste of effort and time , and profitability , whether for2farms or the state , and the characteristics of varieties differ .Dates vary according to the areas of cultivation and the diversity of condition the climate in which they grow along with the varied needs of each class . It is common practice to split data varieties are made according to the range of criteria includes the color of the shell the type of sugars prevailing fruits at ripening and the timing of early ripening mother late in addition to the moisture content of the fruits at full ripeness the latter standard is considered the most widely used standard importance . Dates are divided according to the standard of moisture content First:the group of wet dates varieties. Varieties of this group are characterized by having a ratio they are low in sugar and high in moisture it cannot be preserved for a long time without proper preservation they are subjected to fermentation and the fruits of this group ar2e distinguished the different colors of its fruits are eaten soft .Second: the group of semi –dryvarieties this groups is characterized by the fact that its fruits if ripened , will become the pulp is of medium moisture and it is neither wet nor dry it can be preserved after long collection by natural methods suitable for manufacturing.Third: the group of dry fruits varieties they are the varieties that reach the stage of complete drought , where this group is characterized by that its fruits if reached stages maturity has become dry pulp with low moisture content high is sugars and thus can be stored for long periods by natural means while retaining its distinctive properties .Sugars Content :The total sugar content of fully ripened dates varies between 75-85% of the pulp (the part of the fruit that is eaten with the exclusion of nuclei), the variation in the percentage of sugars is mainly due to the type of date palm (scientific date palm varieties) as well as due to other factors such as the method of serving the palm ,area agriculture , climatic conditions , harvest time , and last dates storage conditions (especially temperature and humidity relative to the atmosphere).This may add to the minor

differences results from the method of analyzing dates samples and the accuracy of taking results .Total sugars present in dates are divided into two basic types Reducing sugars (mono, simple or transformed).These monosaccharide's are made up of glycogen glucose and fructose in equal proportions (i.e. 50% for each) most types of dates contain a high percentage of these sugars . Disaccharides (sucrose)Few types of dates contain this type of sugar the most famous type of diabetes is 45% sucrose and 36% reducing and the sugar in dates is mostly in the from an approximately equal mixture of glucose and fructose and this the mixture is called an (upside down) inv in addition , sucrose is present in different proportion dates , this depends on the type of dates .In general , there is on difference in the amount of calories thermocouple between any liked of sugars mentioned either regarding the degree of sweetness of sugars , we find that break sugar fructose is about one time sweeter than sucrose and half as well as glucose as research indicates that sugar fructose has the advantage of being slower to down into the blood when eat it which is an advantage for him .**Ahmed, et al 1995.**Dagla date varietyHarvested in the interstitial stage and the beginning of the wet stage the physical properties of this type variation takes shape oval, yellow-brown in color, and the size varies between 20 to 60 mm in length and 8 to30 mm in width the fruit is ripe from a hard core enclosed in a paper cover it is called Alqatmir the chemical properties of this species contain energy up to 297 calories per 100 grams and rich with should and insoluble fibers it also contains 70% water, sugar and protein 2.45% also contain the proportion of mineral salts and vitamin A, B and ratio of fat and the proportion of carbohydrates up to 75.03% and an average amount of mg, k and ca**.**Barnsali date variety:This species is harvested in the during or wet phase it is characterized by the quality as it takes a longitudinal shape and is brown in color I tend to have redness as it takes from 20 to 70 mm in length and from 10 to 45 mm in width and the fruit is mature the chemical properties of this species have an amount of energy 277 calories and has a high fiber content it is 7% grams and contains monosaccharide's of about 79.8% and 4.9% disaccharides as it contains the proportion of protein is 2% and contains 75 grams of carbohydrates and a group of K elements mg, fe, ca and vitamin B6.Tabouni date variety:it is harvested in the crushed or wet stage and is of good quality it takes a round shape of a yellowish red color where it takes length from 15 to 50 mm and 20 to 35 incidentally, the fruit is rips and the

chemical properties of this the type is about 47% moisture and 2.5% protein, fat 0.4% g and contain a percentage of carbohydrates also contains a host of elements fe, ca, mg.The physical and chemical properties of data varieties :Fruits should be stored in the khalal stage at a degree 0˚ C temperature and 90-85% relative humidity in order to reduce loss of water and delaying the fruit ripening process to the wet stage and to keep its texture and flavor fresh and appropriate, that packing these fruits in plastic bags or as a lining the plastic packaging helps reduce water loss.The optimum temperature for storing fruits is in a phase dates are zero C and for a period of 12-6 months, depending on item semi-dry varieties such as Tigris have a long life longer storage than in the case of soft items such as (Barnsaliand Tabuni), and if you want to store long periods use temperatures below-15.7 C ,that dates with moisture content of 20% or less it can be stored at -18˚C and for a period longer than a year or keeping it at a grade of zero C for a year or a degree 4pm for a period of months or over 20C for a period of one month the relative humidity should be between 75-65% in each cases (note the correlation of temperature with the period warehousing).Low-grade storage and transportation are the most important a way to preserve the quality of dates because it reduces waste color, flavor and consistency delay stains diabetes, molds, yeasts and infections insecticide and prevent leakage of the resulting syrup by converting sucrose into reducing sugars, the appearance of reduced the sour taste in dates has increased moisture content.Relative humidity is the moisture content (as water vapor) in the air, according to the maximum moisture content it can this atmosphere is kept under conditions of heat and pressure without condensation of this vapor, it is noted that air's ability to hold moisture increases with height heat, as the water loss is directly related to a difference water vapor pressure between the crop and the surrounding atmosphere, and the relative humidity in the atmosphere can affect loss water or some physiological damage and growth the fungi also condense moisture on the crop (Sweat) and water droplets stay for a long time on the crop it may be more important in further disease progression relative humidity present in the surrounding air the yield, as well as the appropriate level of moisture about dates is 75-65%, as it is in moisture higher relative, dates may absorb moisture from air the room, unless it is packed in impermeable packages for humidity, the term water activity may be used (water activity) (2.85-0.65) and this corresponds to moisture content of 15 to 35% in dates, so

the more aqueous activity decreased, resistance to injuries increased molds, yeasts and bacteria that infect dates. **Abu Ayyana,2014.**Glycemic index definition :The glycemic index (GI), which is an abbreviation an index to measure blood sugar levels through evaluation different foods depending on how fast or slow these foods increase blood glucose levels, where food with a low glycemic index turns into glucose is released slowly and steadily into the blood thus working on it increase weight loss .As for food that has a high glycemic index it works to release glucose quickly, which helps to increase body energy, especially after exercising sport or to make up for low blood sugar the glycemic index works by classification carbohydrates on a scale from 0 to 100 helps glycemic index compared to the speed of digestion your body to the various foods it contains carbohydrates.Foods that raise glucose levels contain blood quickly gets a higher number that are raised glucose levels are slower and foods are categorized by contain (55 or less) low index glycemic index ,which contains (56 to 69) medium index, foods containing (70 or more) high index .Glycemic index categories **:**Categories for the glycemic index there are various research methods for determining the glycemic index for food in general , this number depends on the amount food that raises blood glucose level compared to the amount of pure glucose raises glucose levels in blood, the glycemic index values are usually divided into three classes :The glycemic index is low from 1 to 55 , Glycemic index averages 56 to 69,The glycemic index is high of 70 or more .The rates at which different foods are raised are ranked blood sugar levels with the degree of absorption of sugar pure glucose in the blood that is used as a measure reference value of 100 (GI).Thus a comparison of these values can help guide to make better healthy food choices .Food with a high glycemic index it works to release glucose quickly, which helps to increase the energy of the body, especially after exercise to compensate for the lack of blood sugar the glycemic index works by classification Carbohydrates on a scale from 0 to 100 helps glycemic index compared to the speed of digestion your body for the various foods it contains carbohydrates .

Table:1 Shows Glycemic Index Categories

Glycemic Index	
Low	**55**
Medium	**55-70**

High	**70**

***The reference food is arbitrarily assigned a GI of 100.**

Glycemic index important :Its quantity is one billion limit the importance of the glycemic index There are foods that raise blood glucose in a way Fast and large , while other foods affect ratio glucose slowly and gradually, certain foods can lift the blood sugar level is too fast , like sugars refined and baked are foods that contain the type from carbohydrates that are transformed inside the human body easily into glucose, and bas a sugar that the body uses for energy, the other types of carbohydrates, such as those found in vegetables and grains it is slowly digested in the human body eat a lot of carbohydrates that you turn into glucose in the body easily, this makes it difficult control blood sugar even with getting on diabetes drugs and insulin, the indicator is used glycemic index to differentiate between foods rich in carbohydrates that raise blood sugar or fast that raises sugar gradually the importance of the glycemic index : knowing the glycemic index of foods helps with a quality especially diabetics, as they suffer permanently from high blood glucose, and therefore should they should eat foods with a glycemic index low, as well as people who are proportionate they have a little more glucose than the normal ratio thus, they should eat index foods high glycemic index ,The glycemic index of foods is important for athletes as well They recommend eating index foods increased glycemic before or after exercise directly ,Knowing the glycemic index of foods helps mostly obese patients, as it causes them to avoid foods with a high glycemic index, enablingthem than reduce their weight.Amount and availability of carbohydrate provided :Classifies the number of potential increases in blood sugar forcarbohydrates in foods as an indicator of sugar content in blood (GI), which is the extra area under the curve glycemic response (AUC) that was made derive it by eating a portion of carbohydrates available in 50 grams of food expressed as a ratio Celsius of that after 50g of glucose diabetes since the A-values of GI for foods are similar for proper control and diabetes subjects tested GT values can be applied on topics of health control in nutritional management diabetes (however, given that the GI is not met never test it in people without disease diabetes with insulin resistance / hyperinsulinemia blood, it is not known if the GI is valid in this population .Given that hyperinsulinemia may have a role in the causing insulin resistance and chronic disease associated with it,

one of the main concerns about concept the digestive system is such that it does not consider an insulin response concurrent .Low glycemic index indicates digestibility rates the less carbohydrate absorption is possible denoting a large extract from the liver and the peripheral external products digest carbohydrates, less response to sugar in blood usually leads to decrease in the need for insulin, however, is not permanent, and it may improve regulating blood sugar in the long term and on blood lipids, insulin index is also helpful saving is a direct measure of the insulin response to foods . **Jenkins DJA, 1981**.Mode and timing of blood sampling :Estimating blood glucose is an important laboratory test it can diagnose both types of diabetes: plasma glucose test: Withdraw a sample from a vein after fasting from food for a period of at least eight hours and not exceed ten is the first way direct assessment of blood sugar levels the normal ratio is 80-100 mg ⁄dL natural health while the ratio is 100-125 mg⁄dc Walter reflect the per-sugar phase while increasing the percentage on 126 d mg⁄dL confirms the presence of diabetes. Glucose Tolerance Test: what this means the test is a test of the ability of the insulin secreted by the pancreas to deal with sugar glucose. An initial sample is drawn from intravenously to determine blood glucose and then taking the person is a sugary liquid that contains 75 grams of sugar withdraw another blood sample after two hours. If it came the percentage of glucose in the blood in the sample taken after oral sugar intake in the range of 139 mg⁄dL it came naturally, but if it increased to 140-199mg⁄Dice Liters Thinking about a per-sugar state more than 200 mg ⁄dL was the diagnosis stressing diabetes. The blood sugar level should also be measured after eating sugar solution «75g sugar» and fasting for two hours this is a more accurate analysis as it reflects the capacity of insulin on the action and thus the adequate availability of the secretion of the pancreas the control blood glucose on the handand tissues and cells from the other side.It should start attention to blood glucose disease from the start the thirties and that these readings be recorded and kept in a file a healthy person with the beginning of forty and that is to take place the testes regularly ensure that they follow their developments. A analysis of sugar two hours after eating glucose levels being to rise after ten minutes almost from eating a meal as a result of absorption dietary carbohydrates, and glucose levels are reported in the plasma peaks 60 minutes after a meal, and it is rare for your peak sugar levels to exceed 140 mg⁄dL in healthy people who do not of diabetes, as sugar levels return to their normal

level after twoto three hours of eating food, it is worth nothing that absorption carbohydrates last for 5-6 hours after eating the meal, despite the return of the sugar level to the situation normal after about three hours.**Pi-Sunyer, et al (2002).**Glycemic (available) carbohydrates :The glycemic index of carbohydrates represents how quickly blood sugar levels increase when take it up .That is, how fast the true level rises also depends on other foods being eaten at the same time and on other factors :The glycemic index tends to be lower for complex carbohydrates from simple carbohydrates but there are exceptions.For example, for fructose a minor effect on blood sugar the glycemic index is necessary because carbohydrates that quickly increase sugar levels in the blood (those that are high in sugar in the blood) also lead to a rapid increase in insulin levels.Increased insulin may lead to low blood sugar levels (hypoglycemia blood) and feeling hungry, which leads to eating calories additional heat and weight gain.The presence of carbohydrates dose not result when the proportion index is low blood sugar increases significantly insulin levels .As a result, the feeling stretches people are full for longer after eating .**Adrienne ,et al1938.**Glycemic index diets **:**Carbohydrates are the body's primary source. And during in the digestive process, sugars and starches are broken down into simple sugars. Then it is absorbed into the bloodstream, this is known as blood sugar (glucose).And from here, glucose enters the body's cell with the help insulin. The body uses glucose to obtain the energy needed to carry out activities – be it exercise or even just breathe. Excess glucose is stored in liver, muscle and other cells for later use or it is converted into fat. **Augustin LSA, et al.2015.**The digestive process differs in its speed and effect accordingly the type of food, which varies according to the type of starch they are complex forms of sugar compounds, thereit is carbohydrates rapidly degrade during digestion . The blood glucose response is fast and high, meaning that glucose in the bloodstream increases rapidly after eating those starches. This type of food has an index value high glucose.Conversely, foods that contain starches degrade slowly, glucose is gradually released into her bloodstream low glycemic index value. So, the glycemic index describes the type of starch in your body food. It indicates the ability of starch to raise blood glucose levels .Index food high diabetes contains carbohydrates that cause an increase severe blood glucose levels . While the food low glycemic index that contains carbohydrates less effect .It indicated studies conducted on diets based on the glycemic index in 2003 the

results showed that the diet is low carbohydrates provide more benefits weight loss from index-based systems glycemic therefore, the dietary guidelines recommend that carbohydrates mace up a ratio of 45 to 65 percent of your total daily calories .**Matthan NR, et al.2016.**Postpraindial study**:**Oat β—glucan is well known for its ability to reduce postprandial glucose and insulin responses after an oral glucose load in diabetic both insolated oat gum and an oat bran containing β—glucan have been shown to be effective in a study by Tappy et al., (20). Progressive decreases were in blood glucose of 33 to 63% and in insulin of 33 to 41% relative to the control breakfast. The efficacy is dependent on viscosity, however and may be lost if viscosity is reduced in food processing due to e.g. enzymatic breakdown . The viscosity of β—glucan as measured in an assay simulating the physiological breakfast cereals. It has also been pointed out that predicting the action of a polysaccharide on the basis of pre ingestion viscosity can be misleading and that viscosity should be high at the site of absorption in the gut.**Wolever,et al 2003.**Glycemic load **:**Glycemic sentences glycemic loa (GL) is a relatively new term that follows the term index glycemic and used with it to give a clearer picture the effect of starch consumption on high blood sugar blood because the glycemic index only indicates velocity starchy food has turned into sugar and is not indicative the amount of starch in the food that will turn into sugar, what is required is tohave the two pieces of information to understand the effect of a food on blood sugar. As an example so we find that the glycemic index of red watermelon is high but the amount of starches in watermelon laden with liquids it is considered low and therefore has a low glycemic load. If it is 11 to 19, then it is average, and if it is 10 or less it is low. Usually foods are low in camel low glycemic index.**Wolever,et al 2003.**

Table :2 Shows the range of glycemic load

Glycemic load	
High glycemic load	**>20**
Moderate glycemic load	**11-19**
Low glycemic load	**≤10**

GI, obesity and weight loss:Diet that has a glycemic index in the blood is an affective weight loss diet, as the diet is based on low-index foods glycemic.It can help you eat foods that contain:A high percentage of GI helps to gain weight quickly. It causes high insulin levels to replenish blood glucose fat cells. Insulin also blocks the body's ability to get energy from fat stores.Eating foods with a low glycemic index results in less sugar blood for 10 days to lose weight by 3-2 kg which is facilitated by the following factors:Lack of fast carbohydrates in foods, and as a result so there is no increase in the supply of adipose tissue; lack of fast carbohydrates in the system diet, there is a decrease in edema and the removal of excess water from the body; reduced hunger caused by blood sugar levels natural.The diet should be based on the following principle: There one or two main meals and a snack shape fruits or vegetables. At the same time, it is forbidden eat food with an index higher than 70 the first time after starting the diet.When the required weight is reached, you can diversify the regimen food by adding food products in higher proportions in case in a limited amount: 150-100 grams once a week.The diet has several advantages as it does not it not only contributes to weight loss, but also to recovery the whole body, namely: accelerate metabolism.The digestive system is normalized strengthening immunity due to lake of sugar in diet which significantly reduces the body's defenses; reducing the likelihood of developing heart and liver disease.Lack of vitamins and minerals as a result of eating large amounts from vegetables and fruits. With type 2 diabetes proper nutrition is an important component in treating a disease type 2 diabetes. Food intake is low the glycemic index slightly increases levels of blood sugar, which makes it possible to avoid treatment with insulin. When treating the disease, a reduced diet is used calories from 9 tables or diet low in carbohydrates with a low content of complex carbohydrates. At the same time, though from choosing a diet, it is necessary to abandon foods with a high glycemic index. Except correct diet for diabetes is allowed by keeping the level of glucose in the blood within the normal range not only natural, but also allows you to lose excess weight, which is usually associated with diabetes it is essential to check all nutritional directions new for scientific evidence. Known index since long time in the scientific community-the glycemic index in blood for foods it has recently gained importance in the field "modern "nutrition. For people with diabetes, from take into account the glycemic index of foods (GI), because computing the index will help

control blood sugar concentration.The indicator depends on the heat treatment method and the content proteins and fats in the product as well as type carbohydrates and fiber intake. **SaiKeruba Das 2013.**Dr. Muhammad Yusef bin Yas and others, 2011, index sugar in dates)In a recent scientific study entitled (Glucose index in dates)at the collage medicine at the Emirates university, where the study touched on dates eat by diabetics according to the standards set within a balanced health system so that the number does not increase dates, for a maximum of 7 grains per meal only 50 grams where the study is of great importance due to the high incidence of diabetes .The study focused on the types of salvation in Maan. Dabba s_ Lulu. Blood sugar level revealed to healthy people those who eat these varieties of dates in a balanced way very similar to the proportion in the blood of people with diabetes who eat the same amount the study did not detect any significant differences where it was included the study is 23 volunteers, including 13 volunteers from healthy people and 10 volunteers with type 2 diabetes underwent all of them undergo a comprehensive medical examination before undergoing a study.The volunteers were given 50 grams of sugar and an equal amount of carbohydrates found in types of dates on different days according to scientific standards and was done after that, the volunteers' blood sugar was measured healthy patients after eating dates.Where the study recommended diabetics to eat dates in a balanced way and in specific quantities because it contains high calorie level equal to 157 units calories per 7 dates, which is equivalent to 10% of the individual need of calories daily.The study confirmed that dates are one of the types of fruits that are raised the level of sugar in the blood is slightly, although it contains me a high amount of calories because they contain a proportion reasonable fiber was estimated at 11% for the duration of the study 6 months on dates and not wet.The scientific study aims to measure the extent of the percentage rise blood sugar after consuming dates among people healthy people and people with diabetes.Dr. Aisha Al-Dhaheri, 2017, study food impact popularity on the rate of blood sugar,From in a local study entitled (study on the impact of popularFoods on blood sugar levels) the group is a scientific research team under the supervision of Dr. Aisha Al Dhaheri, Head of the Nutrition department. The study aimed to encourage healthy food and provide dietary by studying the effect traditional folk cuisine on the rate of blood sugar by analyzing 18 varieties food items the popular sample consisted of 15 male and female students participants in the

applied research and experience of these cuisines he took blood samples from them for analysis as he participated in the study field of 88 volunteers involved taking blood samples it is essential in addition to taking samples before and after eating popular cuisine and during different time periods after take it up. This study indicated exposure index and pregnancy glycemic for Arab foods in general the results of the analyzes were presented for evaluation, as the dishes were included main baked, appetizers and desserts to see the values the glycemic index to measure the level and effects of glucose in blood for diabetic patients on a nutritional level and knowing the effect the food has a specific blood sugar level as indicated the effect of eating certain types of rapidly rising blood glucose level.The results of the study were that this test helped my disease diabetics monitor their condition and control their diet to control blood sugar levels .Study bezel foods in Local foods with a glycemic index were classified high within a scale determines how different parts are compared in terms of raising blood sugar levels and so be there are 14 species out of the 18 selected as this takes the scale takes into account carbohydrates in the foods and the rapid rise in blood sugar after eating2015, Journal of Ayurveda and Integrative Medicine In 2015, the results of a 16-year study were published it tracked the diet of 120,000 men and women. The researchers found diets that contain a high percentage of glycemic index, from eating refined grains starches and sugars have been linked to weight gain. Studies have shown that the diet that contains a low glycemic index may boost chances of losing weight and helps maintain lose therefore, study date indicated that there is great variation in individual glycemic index values for the same foods. This is the range of variance in glycemic index values in blood does not provide a reliable guide when selecting options the food.The study indicates that the total amount of carbohydrates in the food generally predicts a good blood glucose response greater than the glycemic index. Based on the research, the best way to control blood glucose for most diabetics are counting carbohydrates.Clinical study has shown that a diet low glycemic index may help people with diabetes to control blood glucose level, though the observed effects may also be attributed to the content low in calories and high in content fiber is in the diet described in the study.Reviews of trials have shown that they measured the effect low glycemic index diets cholesterol is a fairly consistent indication of this diets may help lower total cholesterol, and also low-density lipoproteins-especially

when the glycemic index diet meets low with an increase in dietary fiber. Foods are considered with a low glycemic index to medium, like fruits, vegetables and grains complete, generally good sources of fiber. Barnard, ND et al, 2006, Cinnamon fatty diet and control of blood sugar and factors cardiovascular risk in a randomized clinical trial for individuals with type 2 diabetes, care diabetics ,The studies that have been done to date indicate that cinnamon has a clear effect on improving health disease, type II diabetes, cross-capacity increase their bode cells respond and are affected by the effect of what is insulin is available in their bodies, and the production of this is reduced cells have enzymes that block the action of insulin well in these cells, leading to a proportionate adjustment blood sugar toward its normal range. The study is considered from the most important stages of scientific research on the effect of cinnamon on sugar it also provides. And in it, 60 people were followed diabetes who are not treated with insulin. They have been divided into six groups, taking patients in each of the groups the first three are capsules with different dosages from cinnamon powder, specifically 1,3 and 6 grams of ground cinnamon. The rest of the other three groups people in it ate different calorie foods meaning mixed medium and high index foods glycemic the percentage of diabetes and lipid analysis was followed in stages several before, during and after 20 days to stop eating cinnamon. The results amazed everyone, as it turned out to be eaten cinnamon, even at 1 gram per day, lad to a decrease the percentage of sugar after an overnight fast is between 18 and 29%, and reduced total cholesterol by of my patients between ranging between 12 and 26%, and the percentage of cholesterol light harmful by a rate ranging between 7 and 27%, and proportion triglycerides ranging between 23 and 30%, the effect lasted for 20 days after discontinuation eat it. The findings of the researchers were that of cinnamon significant effect on blood sugar and activation reaction cellular insulin, and thus cinnamon has a slimming effect the weight.

MATERIALS &METHODS:

1- **collection of sample (Dates types):**Three types of dates (Barnsali, Tabouni andDagla) were brought from the local market 7.5 gm.
2- **Blood sugar measuring apparatus :**The model of blood sugar measuring apparatus is Accuchek active .
3- **Methods Determination of total sugars by Lane and Eynon method in different types of dates :**The Lane and Eynon method was used according to James (1995) .

4- **Preparation of (sample solution)** :**Preparation three solutions for each of the three types of dates (Barnsali, Tabouni and Dagla) :**The sugars were estimated According to the **Lane and Eynon** method mentioned in (James 1995). in the stage of ripening of the fruits of the three types of dates (Barnsali, Tabouni and Dagla)by taking 50 grams of the moist fruit flesh after removing the pulp from them, then after that the flesh of the fruits is mashed well by means of (mortar and pestle) and then transferred The meat of the mashed fruits into a baker's capacity is 250 ml, then 100 ml of distilled water is added to it, then placed on *Plate* magnetic stirrer plate for half an hour for the purpose of stirring the sample solution to extract the sugars from it and placing the sample mixture in a water bath at a temperature of 50°C for half an hour and then transferring The sample mixture from the beaker was quantitatively transferred to a 500 ml volumetric flask and then a clearing process was performed using 15 ml of crise (A) 10.6 g potassium Ferro cyanide tri anhydrate per 100 ml and 15 ml of crise (B) 21.9 g zinc acetate dehydrate and 2ml glacial acetic acid per 100 ml.and shaken well and then filtered the sample mixture by Filter paper.

5- **Titratio:**Titration of three solutions for each of the three types of dates (Barnsali, Tabouni and Dagla).The titration is divided into two parts titration of reducing sugars as monosaccharide's such as glucose (sample solution) and fructose, and titration of non-reducing sugars disaccharides such as sucrose, that is, after the conversion from disaccharides to monosaccharide's, they are called (converted sugars).**Howrtiz , et al (1975).**The total sugars concentrations obtained from titrations of reducing sugars and converted sugars were according to the following **table 3.**

Dates types	total sugars g / L
Barnsali	**38.30**
Tabouni	**45.30**
Dakla	**58.90**

6- **Statistic Analysis:** Data were statistically analyzed accordingTo the Analysis of Variance (ANOVA). The differences between before and after treatments of glucose or date palm varieties were calculated by T test and the differences among treatments means (glucose and date palm varieties) were detected by Duncan's Multiple Range Test -13, according to SPSS v(22).

- **First : The effects of glucose and date types on glucose level.**

After making sure that the data follow a normal distribution, use the Paired T-test for test the effect of glucose and different types of dates on glucose level, The obtained results are shown in the following table:**Table (4):** shows the mean, standard deviation and T-test for glucose and types of dates.

Types	Before	After	Diff	T-test	P-value
	Mean± St.d	Mean± St.d	Mean± St.d		
Glucose	101.50 ± 9.13	166.50 ± 29.92	65.00 ± 25.66	8.010	0.000**
Barnsali	105.13 ± 10.96	178.20 ± 20.63	73.07 ± 27.50	8.400	0.000**
Dagla	97.50 ± 10.82	183.96 ± 29.45	86.46 ± 31.90	8.571	0.000**
Tabouni	104.80 ± 12.02	127.60 ± 35.87	22.80 ± 26.60	2.711	0.024*

Source: From SPSS analysis based on the sample data. ** Significant at 1% , * Significant at 5%.

From Table (4) above, it is clear that the average difference between (before - after) eating dates of the Dagla type is (86.46), and a standard deviation of (31.90), which is the highest average, It is also clear that the mean difference for the type of AL-Barnsoli is (73.07), with a standard deviation of (27.5), and we find that the mean difference for glucose is (65.0), and with a standard deviation of (25.66), and that these differences are considered significant differences at the level of (0.01), as the P-value is less than (0.01).While we find that the lowest average difference for the Tabouni type is (22.80), with a standard deviation of (26.60), and that this difference is a significant difference at the level of (0.05), as the P-value is less than (0.05).We conclude from this that eating dates (Barnsali - Dagla) has a significant effect on the glucose level at the level of (0.01), while eating the dates type Tabouni has a significant effect on the level of glucose at the level (0.05).

- **Second: A comparison of the arithmetic averages of glucose and different types of dates and their effect on glucose levels.**

The aim of the analysis is to make a comparison between the arithmetic averages of glucose and the types of dates (Barnsali - Dagla - Tabouni) on the average of glucose. Use The analysis of variance (ANOVA) for study effect of treatment on glucose level. The obtained results are shown in the following table **Table (5):**The variance analysis table **(ANOVA)**.

S. O.V	S. S	d.f	MS	F-value	P-value	Result
Treatment	22663.64	3	7554.55	9.624	0.000**	**Significant**
Error	28260.31	36	785.01			
Total	50923.95	39				

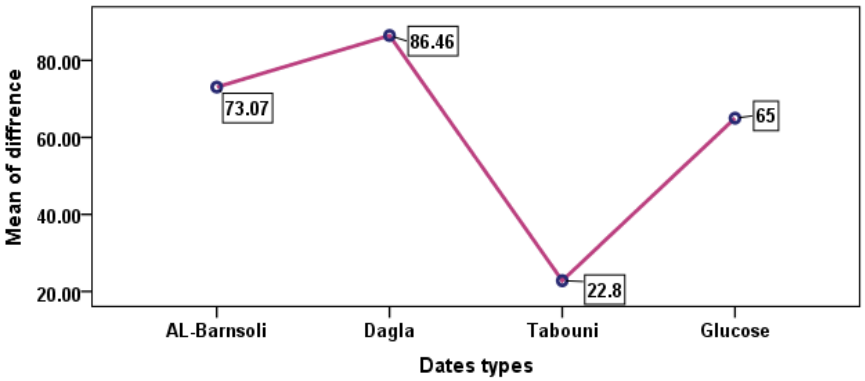
Source: From SPSS analysis based on the sample data. , ** Significant at 1%.

From Table (5) above, it is clear that there are significant differences between the average glucose and the types of dates at the level of significance (0.01) and their effect on the glucose level. Thus, we can say that treatments have a different effect on glucose levels. To find out the significant difference between any two averages in the experiment, the Duncan test was used as shown in the following table **Table (6):Multiple comparisons between means (Duncan)**

Types	Mean± St.d
Glucose	65.0 ± 25.66 **b**
Barnsali	73.07 ± 27.50 **b**
Dagla	86.46 ± 31.90 **b**
Tabouni	22.80 ± 26.60 **a**

a and b Means with the same letter are not significantly different.

he following diagram shows the average glycemic index for the glucose and three dates types.



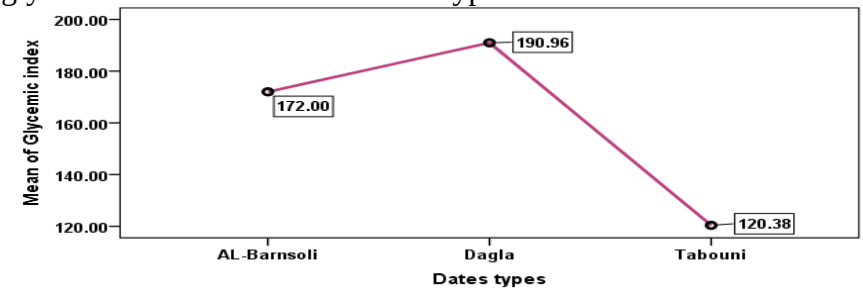
- **Third: The glycemie index of dates types**

The results of the glycemic index [blood glucose response to 50 g test food (date type) divided on blood glucose response to 50 g test glucose multiplication by 100] for dates types are shown in the following table:

Table (7): The Min, Max, Mean and standard deviation of Glycemic Index for dates types.

Dates types	N	Min	Max	Mean± St.d
Barnsali	10	112.28	206.53	172.00 ± 31.54
Dagla	10	112.50	237.50	190.96 ± 36.73
Tabouni	10	100.93	170.63	120.38 ± 21.05

From table(7)above it is clear that the highest average of glycemic index was (190.96) for Dagla type followed by Barnsali (172.00) and Tabouni (120.38) types, respectively.The following diagram shows the average glycemic index for the three dates types.



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17- **SaiKeruba** Das 2013 Scientist with the Energy Metebolism Laboratory at the Nutrition Research center mankind is in old age, and a faculty

member of a college Friedman Nutrition Science and policy at Tufts University. Credit: Nick Higgins.

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