Weill Cornell Medicine-Qatar

WCM-Q Researchers Study Health Benefits Of Dates

Doha – June 22, 2016: Researchers at Weill Cornell Medicine-Qatar (WCM-Q) are using state-of-the-art technologies to discover the health-promoting properties of a food that has special significance for Muslims during the holy month of Ramadan – the date.

While it is well-known that the natural sugars in date fruits make them an ideal food to break one's fast, perhaps less well-known is that they contain large amounts of phytochemicals – naturally occurring plant chemicals that can lower cholesterol, reduce the risk of heart disease, and have anti-oxidant, anti-inflammatory, anti-cancer, neuroprotective and antioxidant properties, among other benefits.

Now researchers at WCM-Q who work in the relatively new field of 'metabolomics' – the holistic study of the biochemical transformations in the human body - are using advanced techniques to analyze the health-promoting phytochemicals contained in two of the region's most popular date varieties: the moist, reddish-brown Khalas, common in the Gulf Cooperation Countries including Qatar and popularly known as the 'queen of dates'; and the Deglet Noor cultivar popular in North African countries such as Tunisia and Algeria.

Researcher Sweety Mathew, WCM-Q Project Specialist in Food Science and Health, explained: "Dates are known to contain phytochemicals such as flavonoids, carotenoids, polyphenols, phytoestrogens and sterols, all of which can have quite profound beneficial effects on human health. We are interested in finding out which of the 'healthy' molecules actually end up in the human body when someone eats dates."

"And further, we want to know how differences in the phytochemical content of the two date varieties impact the human metabolism and therefore human health. So rather than looking at the fiber, minerals and vitamins contained in the dates, we conducted experiments to analyze the presence and changes of phytochemicals in the blood of volunteers who ate dates after fasting for 12 hours. We then compared the outcome of this experiment to one with participants who consumed only a pure sugar drink. This approach was inspired by an essential step performed in the pharmaceutical industry, where a new drug undergoes rigorous testing before it is released in the markets: one of their primary aims is to prove drug 'bioavailability' by showing that a drug actually appears in the blood stream of the volunteers after consumption. Here, we applied the same principle by conducting a clinical trial with dates as the 'drug'. On completion of our analysis, we will be able to say which of the date phytonutrients were actually metabolized by the volunteers and are therefore having a beneficial effect on the human body."

Dr. Stephen Atkin, Professor of Medicine at WCM-Q and an authority on diabetes and obesity research, has a special interest in these plant-derived compounds, especially phytoestrogens. He said: "There are four classes of phytoestrogens: isoflavones, stilbenes, lignans and coumestans. The isoflavones, in particular genistein and daidzein, are of interest due to their high concentration in soy products and the purported health benefits of improving diabetes, and reducing the risk of endocrine-related conditions such as osteoporosis, cardiovascular disease, menopausal symptoms and breast and prostate cancer. It has been found that date fruit have the second highest levels of these phytoestrogens of any fruit.

“Dates may therefore may have significant health benefits if incorporated into a healthy diet.”

The research team enrolled 21 healthy volunteers to take part in the study and took blood samples from them after they had fasted for 12 hours. They then gave them a substantial amount of Deglet Noor dates to eat, and took five blood samples at half-hourly intervals. A week later, the volunteers returned to the clinic and the process was repeated with Khalas dates. As a control experiment, the same process was also conducted with a glucose drink containing only sugar.

Dr. Karsten Suhre, Professor of Physiology and Biophysics at WCM-Q, said: “We have now collected all of the samples and we are currently analyzing them to see what the effect of eating dates is on the human metabolism. This is very exciting because it could potentially provide insight into which varieties of date fruits have higher concentrations of beneficial phytochemicals, which would allow us to make better dietary recommendations to help people protect their health.

Date palms are an extremely important crop in the Middle East as they are extremely well adapted to dry, sandy environments. This project is part of a long and continuing interest that WCM-Q researchers have in the date palm. In 2012 they were awarded a National Priorities Research Program – Exceptional Proposals (NPRP-EP) grant from Qatar National Research Fund (X-014-4-001) to advance research efforts in basic research, translational and clinical research on date palms.

WCM-Q researchers have also created the first known ‘Dates Bio-Bank’ which records the characteristics of more than 250 different varieties of date fruits collected from 15 countries, including Qatar, UAE, Saudi Arabia, Egypt, Iraq, Pakistan, Libya, Tunisia, USA, Morocco, Jordan, Sudan, Oman and Spain. Of these, the researchers have metabolically characterized 110 date fruit varieties. In the future, by combing this data with the results from the new bioavailability study, it shall be possible to predict the specific health benefits of each date variety.

Dr. Joel Malek, Director of the Genomics Core at WCM-Q, who is actively involved in date palm research, led a team that mapped the entire genome of the plant for the very first time in 2008. In doing so the team discovered that it is possible to use genome analysis to determine the gender of date palms when the plant is young, which is commercially significant because only the female trees bear fruit. Traditionally, trees grown from seed require approximately six to eight years to flower before gender can be determined.

Dr. Malek said: “Since we have already sequenced the entire genome of the Khalas date cultivar and will soon complete sequencing of the Deglet Nour cultivar, the clinical trial of the date fruits study, along with metabolomics and genomics studies, will enhance a holistic understanding of the date fruits. To our knowledge, this has not been attempted before, and we believe it will pave the way to maximizing the link between date palm horticulture and human health.”

- Ends -

Photos Captions:
Researchers at WCM-Q who work in the relatively new field of metabolomics

About Weill Cornell Medicine - Qatar

Weill Cornell Medicine - Qatar is a partnership between Cornell University and Qatar Foundation. It offers a comprehensive six-year medical program leading to the Cornell University M.D. degree with teaching by Cornell and Weill Cornell faculty and by physicians at Hamad Medical Corporation (HMC) and Aspetar Orthopedic and Sports Medicine Hospital who hold Weill Cornell appointments. Through its biomedical research program, WCM-Q is building a sustainable research community in Qatar while advancing basic science and clinical research. Through its medical college, WCM-Q seeks to provide the finest education possible for medical students, to improve health care both now and for future generations, and to provide high quality health care to the Qatari population.

For more info, please contact:

Hanan Lakkis
Media Relations Manager
Weill Cornell Medicine - Qatar
Mobile: +974 55536564
Direct Line: +974 44928661
hyl2004@qatar-med.cornell.edu