News Briefs

Grant Recipient to Study Impacts of Polyphenols on DNA Function

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Kenaz Filan

Spanish graduate student Andrea del Saz Lara has received a four-year grant from the International Olive Council (IOC) for her Ph.D. studies and research for her thesis: *Epigenomic consequences of hydroxytyrosol consumption in cardiometabolic diseases*.

"One of the conditions for being awarded the grant was that you had to research olive oil," del Saz told Olive Oil Times. "Honestly, I was not aware of all the properties and benefits worthy of the study of this food. We all know that olive oil is good for our health, but we usually don't know why."

> ***The possibility of preventing certain diseases thanks to some bioactive foods such as olive oil is wonderful and very worthy of further study.***
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> *- Andrea del Saz Lara, researcher, IMDEA Food Institute*

Del Saz's research focuses on epigenomics. Epigenomes are chemical compounds and proteins which modify DNA functions. Epigenomic compounds do not alter the underlying DNA sequence but change the way cells respond to the DNA's instructions.

With the scholarship, del Saz will continue her research on epigenomes at the Madrid-based IMDEA Food Institute.

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"The work they do seems very interesting to me," she said. "The field of epigenetics, and more specifically that of microRNAs, is still little researched and offers many possible biomedical applications."

"In addition, the area of nutrigenomics and personalized nutrition is currently booming and I think that the possibility of preventing certain diseases thanks to some bioactive foods such as olive oil is wonderful and very worthy of further study," she added.

health foods: olive oil. Decades of research have demonstrated that the physically obtained fruit juice has a range of health benefits.

Andrea del Saz Lara

"At the molecular level, it is amazing how many changes olive oil is capable of inducing," del Saz said. "It contains compounds called polyphenols, which are attributed with antioxidant and anti-inflammatory properties."

One of olive oil's most beneficial polyphenols is hydroxytyrosol, which gives olive oil its distinctive flavor and aroma and has demonstrated protective qualities against cardiovascular diseases, cancer and acquired immunodeficiency syndrome (AIDS).

Cardiometabolic diseases include hypertension, diabetes, high cholesterol and adiposity (belly fat). In the United States, about 655,000 Americans die from heart disease each year – one in every four U.S. deaths. People with car-

MicroRNAs (miRNAs), small pieces of RNA that target genes and interfere with biological processes, play a role in obesity, inflammation, and belly fat development. MiRNAs are involved in fat production and are associated with cell-signaling proteins linked to diabetes, obesity and cardiovascular disease.

Hydroxytyrosol reduces the production of several harmful miRNAs and lowers concentrations of inflammatory enzymes. Hydroxytyrosol also increases the production of eNOS, an enzyme that regulates blood vessel constriction and clotting and is essential for cardiovascular health.

Del Saz's research will evaluate the biological effects of hydroxytyrosol consumption in patients with non-alcoholic fatty liver disease through clinical trials which measure liver function, oxidative stress biomarkers and inflammatory enzymes. She will also assess the impact hydroxytyrosol has on miRNAs and other epigenomic functions.

"The most important thing I have learned is that we are what we eat and that we must take care of our diet if we want to maintain our health," she said. "Until now, I had not been aware of how the nutrients we ingest modify the way our genes are regulated and how this can induce the appearance of some diseases."

Del Saz is a graduate of the University of Castille-La Mancha and received a Master's degree in experimental biomedicine in 2020. With the help of the IOC grant, she will continue conducting her research at the IMDEA Food Institute.

"I wanted to continue with my predoctoral studies, but without funding, it was very complicated," del Saz said. "I will always remember the day they confirmed that I had been awarded the scholarship as one of the happiest days of my life. For me, research is a dream."

Cited sources:

Frontiers in Nutrition

Centers for Disease Control and Prevention

U.S. Pharmacist

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