



61° SIB MEETING Virtual Edition

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Scientific Program

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Dextran-curcumin nanoparticles as drug delivery vehicle: inhibition of prostate cancer progression.

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DIAGNOSTIC AND THERAPEUTIC POTENTIAL OF SINGLE DOMAIN ANTIBODIES IN ALZHEIMER'S DISEASE ,

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STRUCTURAL BASIS FOR THE RECOGNITION OF SARS-COV-2 BY HUMAN NICOTINIC ACETHYLCHOLINE RECEPTORS

Pratelli Giovanni (University of Palermo) Anti-adipogenic potential of bio-waste products of Sicilian mango in 3T3-L1 cells

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The role of ABCC6 and NT5E inhibitors in colon cancer cells.

Emide Davide (University of Milano)

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Gatticchi Leonardo (University of Perugia)

CRISPR/Cas9-mediated knock-out of AGXT1 in HepG2 cells as a new in vitro model of Primary Hyperoxaluria Type 1

Murtas Giulia (University of Insubria)

Deepen human D-3-phosphoglycerate dehydrogenase biochemical properties to get insight in L-serine metabolism".

Visibelli Anna (University of Siena)

Machine learning approaches in precision medicine: applications to an integrated bioinformatics digital ecosystem platform for a rare disease

Anti-adipogenic potential of bio-waste products of Sicilian mango in 3T3-L1 cells

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Obesity, characterized by an hypertrophic expansion of white adipose tissue, represents a risk factor for the development of several chronic and deadly diseases, including diabetes, heart disease, and some cancers. Inhibition of adipocyte differentiation represents a strategy to prevent obesity and related diseases. Mango (*Mangifera indica* L) is a plant belonging to the Anacardiaceae family whose cultivation is widespread in tropical and subtropical areas of the world. A vast literature highlights how different parts of the plant (leaves, flowers, bark) and of the fruit (peel, pulp and seed) of mango contain phytochemicals capable of exerting anti-inflammatory, anti-oxidant and anti-tumoral effects^[1,2]. Mango peel and seed are the main bio-waste products from mango processing, representing a consistent part of the fruit. Here, we investigated the effect of Mango Peel (MPE) and Mango Seed (MSE) extracts cultivated in Sicily (Italy) on 3T3-L1 adipocyte differentiation. Oil-red O staining and triglyceride assay demonstrated that treatments of 3T3-L1 pre-adipocytes with MPE and MSE lowered the accumulation of lipid droplets and triglyceride content during adipogenesis. Consistently, MPE and MSE reduced the level of the key adipogenic transcription factor PPAR γ and its downstream target genes FABP4/AP2, GLUT4 and Adipsin. Moreover, both the extracts lowered the level of SREBP, a transcription factor upregulated under adipocyte differentiation which promotes lipogenesis. By contrast, the phosphorylation of AMPK and its target acetyl-CoA carboxylase were stimulated. Therefore, these results indicate that MPE and MSE inhibits adipocyte lipid accumulation through suppression of adipogenesis/lipogenesis-related factors and activation of the AMPK. Therefore, it suggests that bio-waste products of mango may be used as a potentially beneficial plant material for preventing obesity.

[1].Lauricella, M. Emanuele, S. Calvaruso, G. Giuliano, M. D'Anneo A. *Nutrients*. (2017), 9(5):52.

[2] Lauricella, M. Lo Galbo, V. Cernigliaro, C. Maggio, A. Palumbo Piccionello, A. Calvaruso, G. Carlisi, D. Emanuele, S. Giuliano, M. D'Anneo, A. *Antioxidants* (Basel). 2019 Sep 22;8(10):422.