61° SIB MEETING Virtual Edition

23-24 September 2021

Scientific Program

ABSTRACT BOOK

Thanks to:

JASCO

ZANICHELLI

Organizing Secretariat:

FONDAZIONE ALESSANDRO VOLTA
CULTURA EDUCAZIONE CIVITAS

61° SIB MEETING Virtual Edition

23-24 September 2021

Scientific Program

Scientific and Organizing Committee

Gabriella Tedeschi	UNIVERSITA' DI MILANO*Presidente Comitato Scientifico*
Ferdinando Chiaradonna	MILANO BICOCCA
Giulia Faravelli	PAVIA
Gianna Ferretti	ANCONA
Roberto Gambari	FERRARA
Cesare Indiveri	ARCAVACATA di RENDE
Francesco Malatesta	ROMA LA SAPIENZA
Marco Moracci	NAPOLI FEDERICO II
Marco Vanoni	MILANO BICOCCA

Martino Bolognesi (Milano), Nazzareno Capitanio (Foggia), Francesca Cutruzzolà (Roma), Paola Chiarugi (Firenze), Italia Di Liegro (Palermo), Gianfranco Gilardi (Torino), Silvana Hrelia (Bologna), Mauro Maccarrone (L'Aquila), Eugenio Monti (Brescia), Marina Porcelli (Napoli), Raffaele Porta (Napoli), Annalisa Santucci (Siena), Silvio Tosatto (Padova)

METHYL GALLATE, A PHYTOCHEMICAL DERIVATIVE OF GALLIC ACID, INDUCES AUTOPHAGY AND APOPTOTIC CELL DEMISE IN HUMAN COLON CANCER CELLS

Giovanni Danilo D'Angelo,[a] Valentina Lo Galbo[a], Marianna Lauricella[b], Sonia Emanuele[b], Michela Giuliano[a], Diana Di Liberto[c], Daniela Carlisi[b] and Antonella D'Anneo[a]

[a] DEPARTMENT OF BIOLOGICAL, CHEMICAL AND PHARMACEUTICAL SCIENCES AND TECHNOLOGIES (STEBICEF), LABORATORY OF BIOCHEMISTRY, UNIVERSITY OF PALERMO, PALERMO, ITALY.

[b] DEPARTMENT OF BIOMEDICINE, NEUROSCIENCES AND ADVANCED DIAGNOSTICS (BIND), INSTITUTE OF BIOCHEMISTRY, UNIVERSITY OF PALERMO, PALERMO, ITALY.

[c] DEPARTMENT OF BIOMEDICINE, NEUROSCIENCES AND ADVANCED DIAGNOSTICS (BIND), CLADIBIOR, UNIVERSITY OF PALERMO, 90127 PALERMO, ITALY

e-mail: giovannidanilo.dangelo@community.unipa.it

Nowadays, a growing interest has been paid to bioactive natural products derived from fruits [1,2], plants or chemically modified phytocompounds to use as new resources with the anticancer potential[3]. In the present study we present preliminary results concerning the antitumor potential of methyl gallate (MG), a gallate ester widely spread in many fruits and plant species such as Meliaceae species, Galla Rhois, Mangifera indica and seed coats of Givotia rottleriformis Griff [4].

We found out that MG displays a strong anti-tumor activity, reducing the viability of HCT116 cells, a human colon adenocarcinoma cell line, causing a remarkable LDH release and a reduction of clonogenic potential. The analysis of the effects exerted by MG unveiled that this phytochemical induces in the first 24 h an autophagic response that was associated to the increase in LC3II and p62 protein content. The cytotoxic effect of MG was modestly counteracted by the addition of antioxidant NAC, but was associated with a remarkable increase in stress markers. Prolonging the exposure of cells to MG treatment up to 48 h, we observed that MG-treated cells underwent to a p53 dependent apoptotic cell death as evidenced by procaspase-3 decrease and PARP activation. Ongoing studies aim to better characterize the relationship existing between the stimulation of the autophagic machinery and the main players of cellular stress as well as of apoptotic cell death.

References

[1] Lauricella M., Lo Galbo V., Cernigliaro C., Maggio A., Palumbo Piccionello A., Calvaruso G., Carlisi D., Emanuele S., Giuliano M., D'Anneo A. et. al. Antioxidants (2019), 8:422.
[2] Emanuele S., Notaro A., Palumbo Piccionello A., Maggio A:, Lauricella M., D'Anneo A., Cernigliaro C., Calvaruso G., Giuliano M. Nutrients (2018), 10: 1490.
[3] Hasler, C.M. J. Nutr.(2012), 132: 3772–3781.
[4] Rosas et al. Bioactive Food as Dietary Interventions for Arthritis and Related Inflammatory Diseases(2019), 489-505.