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New therapeutic agents from selected medicinal plants against disease

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Abstract

Reactive oxygen species (ROS) are byproducts of the normal metabolism of oxygen and have important roles in cell signaling and homeostasis. However, their accumulation in cells, as in oxidative stress, may cause damage to biological molecules and cell membranes, ultimately leading to cell death. The present study was designed to investigate the anti-inflammatory, antidiabetic and anticancer potential of Pistacialentiscus (Anacardiaceae) and Fraxinus angustifolia (Oleaceae) extracts, as well as identification of active compounds, usingappropriate methodology. Evaluation of antioxidant activity was undertaken to support the anti-inflammatory effects.

The results indicated that P. lentiscus and F. angustifolia extracts, exhibited a promising anti-diabetic activity in streptozotocin (STZ)-induced diabetic rats, by a significant reduction (55%) of blood glucose level, a result confirmed by the inhibition of alpha-amylase activity (65%). The results of the anti-inflammatory activity of P. lentiscus and F. angustifolia showed significant reduction of the paw edema induced by carrageenan. Furtheremore, P. lentiscus extracts showed a significant reduction of pro-inflammatory cytokines (IL-1β) in activated macrophages. Moreover, the extracts of F. angustifolia, significantly inhibited ear edema induced by single and multiple doses of 12-O-tetradecanoylphorbol 13-acetate (TPA) and suppressed the cellular infiltration. In vivo, the vesicles loaded with the crude extract of F. angustifolia and especially penetration enhancer-containing vesicles (PEV) inhibited oxidative stress in human keratinocytes against H2O2 and attenuated edema and leukocyte infiltration by stimulating the repair of TPA-induced skin damage. Chromatographic and spectroscopic analyses allowed the identification of known and new phenolic compounds, some of which are endowed with highly interesting biological activities. Finally, the different extracts of leaf and fruit exhibited strong and promising antioxidant activity.

In light of the obtained results, we can conclude that Pistacia lentiscus and Fraxinus angustifolia could be beneficial in the treatment of inflammatory conditions and diabetes complication

Biography:

Professor Djebbar Atmani is a senior lecturer at the Faculty of Nature and Life Sciences, University of Bejaia (Algeria). He obtained his Master of Science degree from California State University, Los Angeles (USA) in 1987 and his PhD from the University of Sétif (Algeria) in 2004. His research interest is natural products from medicinal plants. He published over thirty papers in high impact scientific journals and attended several seminars and symposia worldwide.

Speaker Publications:

1. Salima Sebaihi-Harzoun, Dina Atmani-Kilani, Nadjet Debbache-Benaida, Frédéric Nana, Emilie Evain-Bana, Gilbert Kirsch, Jessica Tabart, Claire Kevers, Djebbar Atmani (2018). Phytochemical composition, antioxidant and anti-proliferative properties of Genista ferox Poirret. aerial parts. European Journal of Integrative Medicine, 23 : 6-13.

2. AZIB Leila, ATMANI-KILANI Dina, DEBACHE-BENAIDA Nadjet, ATMANI Djebbar (2019). Pistacia lentiscus L. leaves extract and its major phenolic compounds reverse Aluminium-induced neurotoxicity in mice. Industrial Crops and Products, 137: 576-584.

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