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Abstract

Botanical Asteraceae hydroxy-cinnamic acid derivatives a Pharmacognostical approach to delay the metabolic syndrome progression

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Abstract:

The prevalence of metabolic syndrome (METS) directly correlates with the prevalence of obesity, and it is associated with several other risk factors. Among them, chronic inflammation, oxidative stress, and insulin resistance might be reduced in order to delay the progression of METS. The first management of METS involves physical exercises and a suitable diet. Many Asteraceae are plants commonly consumed. The bitter Asteraceae known for their health effect is traditionally used as bitter drinks. Their particularly rich contents in sesquiterpene lactones and hydroxy-cinnamic acids mainly in caffeoyl derivatives confer to these plants good antiMETS potential. These compounds are known for their antioxidant, anti-inflammatory, and insulin-sensitizing effects and confer to bitter Asteraceae the potential to be good candidate products to delay METS. The beneficial action of the caffeoyl derivatives against oxidative stress is to increase the activities of cellular superoxide dismutase (SOD), glutathione peroxidase (GSH-Px) and glutathione reductase (GR) in adipose tissue. Otherwise, caffeoyl derivatives have an insulin-sensitizing effect by increasing the GLUT4 translocation.

Metabolic syndrome leads to insulin resistance and potentially the development of diabetes via obesity, inflammation and oxidative stress. bitter Asteraceae preparations rich in caffeoyl derivatives demonstrate several pharmacological properties related to an anti-METS action, as well as anti-inflammatory, antioxidant and insulin-sensitizing effects. These were correlated to the chemical data describing the content in caffeic acid and its derivatives in each plant. The information highlighted a significant correlation between the hydroxycinnamic acid derivatives present in Asteraceae and their anti-METS potential. Moreover, the antidiabetic effects found for most of them seem to corroborate this observation. Recent studies show a benefit on antiMETS activity when caffeoyls derivatives are used in a mixture. The anti-inflammatory beneficial effect of sesquiterpene lactones can act in parallel to hydroxycinnamic acids and derivatives. In

conclusion, a diet supplemented with edible bitter Asteraceae species or their extraction products with associated bioactive compounds seems to be a good alternative to promote a healthy lifestyle, that delays the progression of METS.

Biography:

Recent graduate in 2018 with a Ph.D. degree in Pharmacognosy, Biochemistry and Phytochemistry from Montpellier University. I was based at the Laboratory of Pharmacology and Experimental Physiopathology of the Faculty of Pharmacy and the Faculty of science. My Ph.D. thesis' subject is devoted to caffeoyl derivatives from the secondary botanical metabolites that can act as new therapeutics for metabolic disorders.

Publication of speakers:

1. Karine, Ferrare & Bidel, Luc & Awwad, Abdulmonem & Poucheret, Patrick & Cazals, Guillaume & Lazennec, Françoise & Azay-Milhau, Jacqueline & Tournier, Michel & Lajoix, Anne-Dominique & Tousch, Didier. (2018). Increase in insulin sensitivity by the association of chicoric acid and chlorogenic acid contained in a natural chicoric acid extract (NCRAE) of chicory (Cichorium intybus L.) for an antidiabetic effect. Journal of Ethnopharmacology. 215. 10.1016/j.jep.2017.12.035.
2. Awwad, Abdulmonem & Poucheret, Patrick & Idres, Arezki & Bidel, Luc & Tousch, Didier. (2020). The bitter Asteraceae: An interesting approach to delay the metabolic syndrome progression. NFS Journal. 18. 10.1016/j.nfs.2020.01.001.

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