

AdCofInov (Innovating coupling technologies for Adding Coffee waste value)

Selective extraction of high added value molecules from coffee pulp waste, by innovative membrane and separation technologies

ABSTRACT

AdCofInov aims to propose a solution to the problem of waste generated by the coffee industry: pulp, skin and mucilage. It is based on research collaborations between CIRAD (UMR QualiSud), CITA (Costa Rica) and IEM. It also relies on an industrial partner, Eurodia Industrie, a French equipment manufacturer.

Keywords : Quality, Society, Transformation, Polyphenol/phenol compounds, Value chain, Coffee, Coffea, 1. Exclu de la photothèque

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Project number : 1403-079

Type of funding : AAP OS

Project type : AAP

Research units in the network :

Start date : 2015-10-01

End date : 2018-09-30

Flagship project : no

Project leader : Manuel Dornier

Project leader's institution : InstitutAgro

Project leader's RU : QUALISUD

Budget allocated : 135000 €

Total budget allocated (including co-financing) : 135000 €

Funding : Labex

GOAL

Implementation and evaluation of a strategy for treating coffee pulp to extract chlorogenic acids (CGA) and detoxify it (high organic load, polyphenols and caffeine) by favouring the use of processes that are low in terms of energy consumption and environmental footprint.

ACTION

- (1) study of the raw material and characterisation of the phenolic fraction,
- (2) study of the extraction stage: development on a laboratory scale and evaluation on a semi-industrial scale,
- (3) study of the potential of coupling membrane techniques (micro, ultra, nanofiltration) for extract concentration and purification.

PERSPECTIVES

The technical feasibility of the process for obtaining an extract enriched in chlorogenic acids has been demonstrated. This process contributes to reducing the environmental impact of waste. In order to

envisage an industrial application, it will be necessary to:

- (1) optimise the extraction conditions for the compounds of interest and gain a better understanding of the transfer mechanisms during the separation stages;
- (2) check the suitability of the quality of the extracts with the specifications of the potential users (agri-food and pharmaceutical industries);
- (3) to investigate the recovery and recycling channels for solid and liquid residues according to their composition and/or residual toxicity;
- (4) to evaluate the economic profitability and environmental impact of the entire coffee pulp processing chain.