



NUTRACEUTICALS

ALFALFA: EXPLOITING AND VALORIZING ALFALFA OUTSIDE OF THE LIVESTOCK INDUSTRY

The project intends to combine the technology of Advanced Instantaneous Pressure Drop with mild extraction techniques to provide a high efficiency biochemical integrated pilot plant that allows to obtain simultaneously:

- Protein for human consumption
- Nutraceuticals
- Functional food ingredients
- Pectin
- Biofuel
- Fibrous materials for green building and insulation / paper industry

Recover at least 70% of the protein fraction of the alfalfa in applications with high added value and a 20% reduction of the GWP compared to protein derived from soybeans. The obtained combined process is able to recycle all the chemicals used in the treatments and is economically self sustaining. It is a zero waste process able to exploit more than 95% of the treated alfalfa solid fraction in applications outside the livestock industry.



Alfalfa is a perennial forage legume. Its primary use is as feed for high-producing dairy cows, because of its high protein content and highly digestible fiber, and secondarily for beef cattle, horses, sheep, and goats. It has been cultivated as livestock fodder since at least the era of the ancient Greeks and Romans.

The protein concentrates from plants of *Medicago sativa*, known as alfalfa, contain (45-60%) of very high quality proteins, pectin, minerals (Ca, Fe, Mg) and vitamins (A, D, E, K).

The main objective of this project are:

Obtain protein concentrates, tested for their quality and with low levels of potentially harmful compounds, which can be administered as supplement for human food.

Obtain pectin concentrates, tested for their quality and with low levels of potentially harmful compounds, which can be administered as supplement for human food.

Study of the beneficial effects of alfalfa derivatives on human health and in particular for the immune system.

Close the circle by recycling by-products from harvesting and processing alfalfa in order to obtain high biological value for human nutrition and other valuable products outside the livestock industry.

