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## Introduction

Fennel (*Foeniculum vulgare* Mill.) is a Mediterranean aromatic plant belonging to the Umbelliferae (Apiaceae) family. The wastes of this plant may be rich of bioactive compounds such as polyphenols that can be used to produce cosmetic and nutraceutical products [1], thank to their anti-inflammatory, antioxidant, immunomodulatory properties [2].

As fennel industrial processes yield a large amount of byproducts, in this study the possibility to retrain this waste food as potential source of bioactive metabolites was investigated. In particular, the metabolite profiles of different parts (fruit, leaves, stems and little stems) of *F. vulgare* waste were investigated by LC-ESI/LTQOrbitrap/MS analysis and a Multivariate Data Analysis approach was developed to discriminate the different fruit parts.

## Results

Decoctions and ethanolic extracts obtained from different parts of fennel were analysed by LC-ESI/LTQOrbitrap/MS and MS<sup>n</sup> analysis. Metabolites mainly belonging to hydroxycinnamic acid derivatives, flavonoid glycosides, flavonoid aglycons, phenolic acids, iridoid derivatives and lignans were putatively identified, on the basis of their retention times, accurate mass measurements, MS/MS data, exploration on specific metabolite database and literature on *F. vulgare* [3]. Moreover, the presence of different oxylipins was relieved, both in decoctions and ethanolic extracts, that were for the first time identified in fennel. The identified compounds are reported in **table 1** for ethanolic extracts and in **table 2** for decoctions.

**Table 1.** Metabolites identified in *F. vulgare* ethanolic extracts by LC-ESI/LTQOrbitrap/MS and LC-ESI/LTQOrbitrap/MS/MS analysis.

Rt	Molecular Formula	Aggr	MS/MS	Identity	FVFR	FVST	FVLS	FVLE
1.97	C <sub>15</sub> H <sub>18</sub> O <sub>10</sub>	0.00	132.0268	4-hydroxybenzoic acid				
5.99	C <sub>15</sub> H <sub>18</sub> O <sub>10</sub>	0.00	161.0309	vanillic acid				
6.96	C <sub>15</sub> H <sub>18</sub> O <sub>10</sub>	2.00	260.0368	protocatechuic acid				
10.10	C <sub>15</sub> H <sub>18</sub> O <sub>10</sub>	2.00	187.0354	vanillic acid				
12.36	C <sub>15</sub> H <sub>18</sub> O <sub>10</sub>	2.00	161.0309	vanillic acid				
12.78	C <sub>15</sub> H <sub>18</sub> O <sub>10</sub>	0.00	187.0354	vanillic acid				
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