

ABSTRACT

Food waste from animals and vegetables is an issue that the food industry faces due to the economic losses, pollution and ethical conflict that it generates. This waste is called by-product when it can be reused, either by the food industry itself or by other industries. An example would be its use for the generation of bioenergy. In the case of the artichoke, where only the heart is packaged, the waste generated by its sale, canned or frozen, amounts to a total of 60,000 tonnes per year in Spain. It is this way, the bracts, the stem and the leaves remain unused. These wastes could be of the industry's interest as they contain a high quantity of functional compounds like phenolic compounds and soluble fibre, being the most important chlorogenic acid, cynarin, inulin and fructo-oligosaccharides (FOS).

In this document, a literature review will be carried out showing different studies that refer to bioactive compounds present in artichoke as well as an analysis of polyphenols, such as chlorogenic acid or cynarin, and its antimicrobial power against different bacteria. Special emphasis will be placed on those compounds that could be present in the microbiota, such as *Staphylococcus aureus* or *Escherichia coli*. Additionally, the prebiotic capacity of both inulin and FOS will be analysed, focusing on the microorganisms whose growth is favoured by these compounds, mainly *Bifidobacterium* and *Lactobacillus*.

From the facts collected in the literature search, it is observed that the colonic microbiota could be modified by the artichoke by-product. This would promote the growth of beneficial bacteria such as *Bifidobacterium*, *Lactobacillus* or *Anaerostipes*. This finding would reduce pathogenic or opportunistic bacteria, and its potential to induce infection and cause a disease, such as *Escherichia coli*, *Prevotella* or *Clostridium*. The result of these modifications would be a significant improvement in the host's health.

This document will present a hypothesis on how bacterial growth might vary depending on its exposure to these compounds. This would demonstrate that the intake of the artichoke by-product may be of interest to the food industry because of its health benefits. Nevertheless, in future studies, *in vitro* and *in vivo* analyses should be carried out to test this hypothesis.

KEY WORDS: Artichoke, by-product, polyphenols, soluble fibre, inulin, fructo-oligosaccharides (FOS), prebiotic, bifidobacteria, lactobacilli, short chain fatty acids (SCFA), microbiota, chlorogenic acid, cynarin, flavonoids