



SEPARATION, PURIFICATION AND FUNGAL BIOTRANSFORMATION OF BIOACTIVE PROCYANIDINS FROM COFFEE PULP

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Coffee pulp, a byproduct from the coffee industry represents a serious problem of environmental pollution. The low biodegradability of coffee pulp is attributed mainly to high content of procyanidins (PCs) or condensed tannins, polyphenols considered as antimicrobials. The mechanisms of microbial biotransformation of PCs are poorly studied. The understanding of these biological processes may allow the development of specific methodologies for sustainable use of such waste. The objective of this experimental study was the characterization of the coffee pulp procyanidins and start the study of fungal biodegradation profiles. The PCs extracted from coffee pulp were purified by Sephadex LH-20 at preparative scale. Finally they were characterized based on its purity (% technical-ButOH HCl), average degree of polymerization (MDP phloroglucinolysis technique) and oxidation state (thioglycolysis). PCs were detected by HPLC-MS.

A purity of $88 \pm 5\%$ for total PCs acetone fraction was obtained using Sephadex LH-20. Coupling the HPLC-MS system was successfully performed and used for analysis of phloroglucinolysis and thiolysis techniques. The phloroglucinolysis showed that mDP PCs purified from coffee pulp using Sephadex LH-20 was 4.04. It was also noted that PCs are formed by 98% (-) - epicatechin and only 2% for (+) - catechin. Finally, thioglycolysis technique which serves to observe specific markers oxidation PCs (1), produced two types of these, corresponding to markers oxidation PCs trimers and tetramers of type A. Such acetone fraction had a rich content of PCs and it was used for fungal biotransformation.