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Synthesis, characterization and antioxidant features of procyanidin B4 and malvidin-3-glucoside stearic acid derivatives

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2 malvidin-3-glucoside stearic acid derivatives.

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12 ABSTRACT

13 The acylation of procyanidin B4 with a saturated fatty acid chloride containing 18
14 carbon atoms was studied in order to obtain procyanidin B4 3-*O*-di-stearic acid
15 conjugate. This compound was structurally characterized by mass spectrometry and 1D
16 and 2D NMR techniques. Derivatization of malvidin-3-glucoside using stearoyl
17 chloride in acetonitrile was also performed yielding mono-, di- and tri-stearic ester
18 derivatives. The novel derivatives obtained revealed significant antioxidant activity,
19 although lower than the respective precursors. However, the chemical modification of
20 anthocyanins and procyanidins (water soluble pigments) to more lipophilic compounds
21 has the advantage of increased bioavailability in biological matrices, and to potentiate
22 their application in food matrices and cosmetic products.

23

24 **Keywords:** procyanidin B4; malvidin-3-glucoside; stearic acid; lipophilization; NMR;
25 mass spectrometry.

26

27 1. Introduction

28

29 Polyphenolic compounds (*e.g.* flavan-3-ols and anthocyanins) are ubiquitously found in
30 nature as they are products of plant secondary metabolism, being responsible for several
31 functions essential to plant survival. Several epidemiological studies have provided
32 support for the association between consumption of fruit, vegetables and certain
33 beverages rich in polyphenols (*e.g.* tea and red wine) and good health. Most of the
34 beneficial effects attributed to polyphenols are related to the antioxidant and biological

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