

FLAVONOIDS ISOLATED FROM THE LEAVES OF *Piptocarpha axillaris* (ASTERACEAE)

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Abstract: Asteraceae is the third largest family which occurs in Atlantic Forest [1], consists in Brazil about 300 genus and 2000 species [2]. Previous phytochemical investigations of *Piptocarpha* genus report the occurrence of sesquiterpenes, triterpenes, steroids and flavonoids [3]. *Piptocarpha axillaris* leaves were collected in a protected area of Atlantic Forest situated at Reserva Biológica da União in Casimiro de Abreu, RJ-Brazil. The material was dried, crushed and macerated with methanol. The methanolic extract was partitioned with organic solvents. Dichloromethane fraction was subjected to column chromatography with silica-gel to yield a flavanone: 5-hydroxy-3', 4',7-trimethoxyflavanone (1). High Performance Countercurrent Chromatography was used to separate the ethyl acetate fraction. Two distinct separation procedures were performed varying only the proportions of the biphasic solvent system. The first one was performed using hexane, ethyl acetate, methanol and water (5:8:5:8) to obtain the flavone: 4',5-dihydroxy-7-methoxyflavone (2). The second was performed using the above mentioned solvent system in the ratio (1:3:1:3) leading to the isolation of a glycosylated flavonol: kaempferol 3-O-β-D-(6''-O-E-p-coumaroyl)-glucopyranosyl (3). Structural elucidations were based on spectral data analysis, mainly ¹H and ¹³C NMR, mono and bidimensional, GC-MS and comparison with literature data. For this work, it is important to highlight the difference between the three classes of flavonoids that are flavanones, flavones and flavonols. ¹³C NMR spectrum of flavanone (1) shows a characteristic signal of the hydrogen bond between the carbonyl at C-4 and hydroxyl at C-5. Another characteristic signal for C-4 is observed at δc: 195.0 ± 2.0 ppm. Still for flavanones are observed signals around δc: 78.0 ± 0.3 ppm and δc: 42.0 ± 0.5 ppm which correspond to carbons C-2 and C-3, respectively [4]. However for flavones and flavonols due to the insaturation between C-2 and C-3, the chemical shifts for C-3 is higher (δc: 103.0 for flavones and 138.0 ± 2.0 ppm for flavonols). These characteristics were observed in this study confirming the structures of the isolated compounds (Figure 1). The phytochemical investigation of *P. axillaris* leaves was performed leading to the isolation and identification of three flavonoids, being first described on the *Piptocarpha* genus. These results are in accordance with the chemical profile described for Asteraceae family, which flavonoids are considered chemical markers.

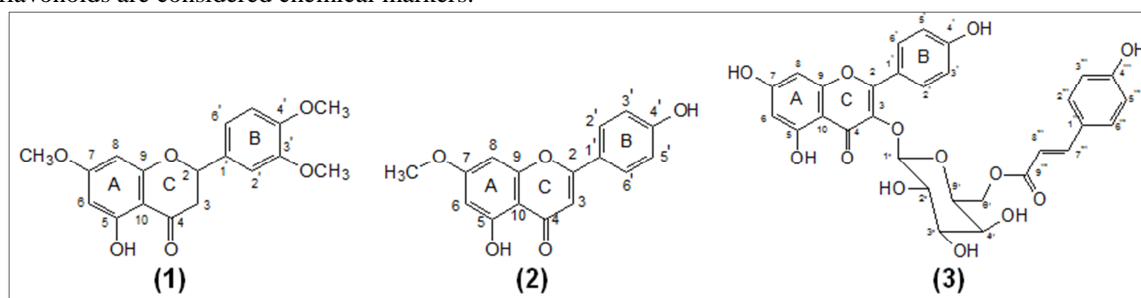


Figure 1. Structures of the isolated flavonoids from *Piptocarpha axillaris*.

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