Use of the ion exchange cartridge in the separation of the anthocyanin fraction from the other flavonoids present in the jamelão peel powder

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The *Syzygium cumini* (L.) Skeels is a Myrtaceae family species, native from Indian, also known as popular names such as jamelão, jambolão, jamblon, jambul, azeitona-do-nordeste, ameixa roxa, murta, baga de freira, guapê, jambuí, azeitona-da-terra. The jamelão is commonly found in different regions of Brazil and its fruiting occurs in the period from January to March. The jamelão fruit (*S. cumini*) has aroused interest due to its medicinal properties, which are generally related to bioactive substances like the phenolic compounds present in its composition. Studies report that the highest concentration of these metabolites, especially anthocyanins, are present in the fruit peel. Due to the jamelão high anthocyanin content, this fruit can be used to the obtention of these pigments in an isolated and purified form. The isolated anthocyanins could be used, for example, as analytical standards. Once others phenolics are present in the jamelão composition, separation techniques are necessary to isolate the anthocyanins from them. So, the aim of this work was to separate the fraction of the anthocyanin pigments from the remaining flavonoids of the jamelão peel powder, through the ion exchange cartridge separation methodology. The fruits were harvested in Guaratiba, Rio de Janeiro, sanitized and only their peels were lyophilized. 500 mg of freeze-dried peel powder were extracted with 30.0 mL of 70% acetone solution in ultrapure water into falcon tube. After this addition, the solution was vortexed, followed by ultrasonic bath for 15 minutes at 45 °C and centrifugation for 10 minutes at 6,000 rpm. The supernatant was collected and transferred to a bottom flask followed by evaporation in a rotary evaporator. After the evaporation, a liquid-liquid partition was performed with ethyl acetate and ultrapure water. The ethyl acetate extract was discarded and the aqueous extract was reserved for the purification of anthocyanins, which was performed using Oasis® MCX Cartridge from Waters®. Two fractions were collected: fraction of non-anthocyanin and anthocyanin flavonoids. The two fractions were analyzed in the UPLC-EM / EM system and the substances observed were suggested by the values of their respective mass spectra compared to the literature. The mass spectra of non-anthocyanin flavonoids showed myricetin-3-*O*-galactoside (t_R=5,29), myricetin-3-*O*-glucoside (t_R=5,53), myricetin-3-*O*- pentoside (t_R=6,61), myricetin-3-*O*-rhamnoside (t_R=7,06), laricitrin-3-*O*-glucoronide (t_R=7,84), quercetin-3-*O*-hexoside (t_R=8,77), syringetin-3-*O*-galactoside (t_R=10,64) and syringetin-3-*O*-glucoside (t_R=11,53). In the anthocyanin extract, five anthocyanins were identified: delphinidin-3,5-*O*-diglucoside (t_R=1,26), cyanidin-3,5-*O*-diglucoside (t_R=1,43), petunidin-3,5-*O*-diglucoside (t_R=1,50), malvidin-3,5-*O*-diglucoside (t_R=2,01), petunidin-3,5-*O*-diglucoside being the major anthocyanin. The laricitrin-3-*O*-

glucuronide and the quercetin-3-*O*-hexoside were detected for the first time in jamelão fruit peel. It can be concluded that the separation method performed in the cation exchange-Oasis® MCX Cartridge presented satisfactory results, showing the efficiency of the separation of anthocyanins from the others flavonoids present in the jamelão peel powder.

Key words: laricitrin-3-*O*-glucoronide, UPLC-MS/MS and cation exchange cartridge.