

Flavonoid Profile of BRS Violeta Grape Pomace Extracts Obtained via Pressurized Liquid Extraction

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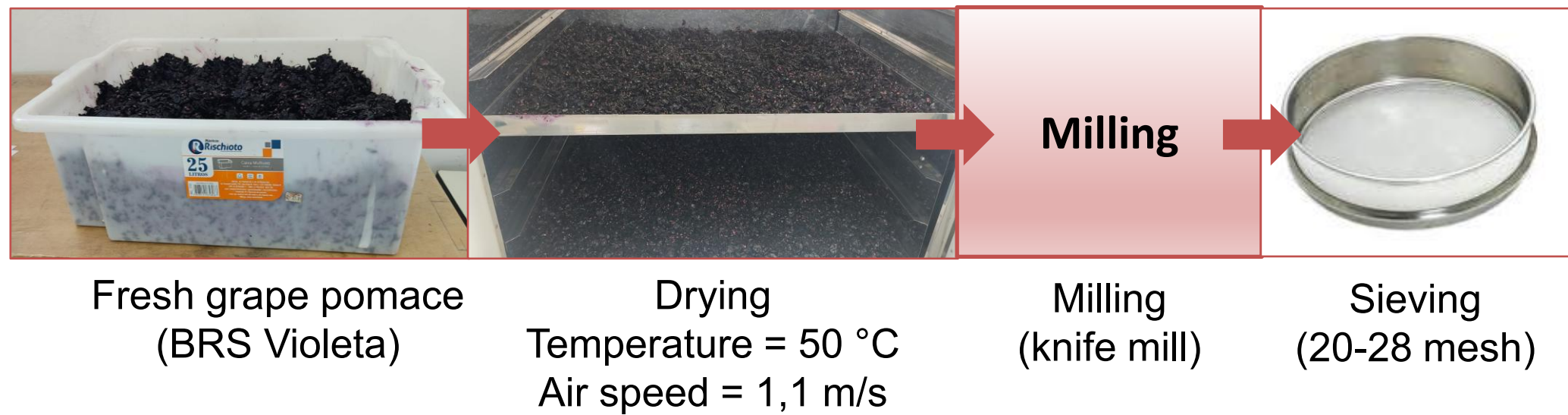
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INTRODUCTION & AIM

Grape pomace, generated during wine and juice production, retains nutrients and bioactive compounds, particularly phenolics. Flavonoids, the largest class of phenolics, exhibit antioxidant, antimicrobial, antitumor, and cardioprotective activities. Various extraction techniques have been studied to improve the recovery of these compounds. Pressurized Liquid Extraction (PLE) subjects a solvent to high pressure and temperature, below its critical point, enhancing the solubility and diffusion of bioactive compounds from solid or semi-solid matrices. This study aimed to determine the flavonoid profile of BRS Violeta grape pomace obtained by PLE.

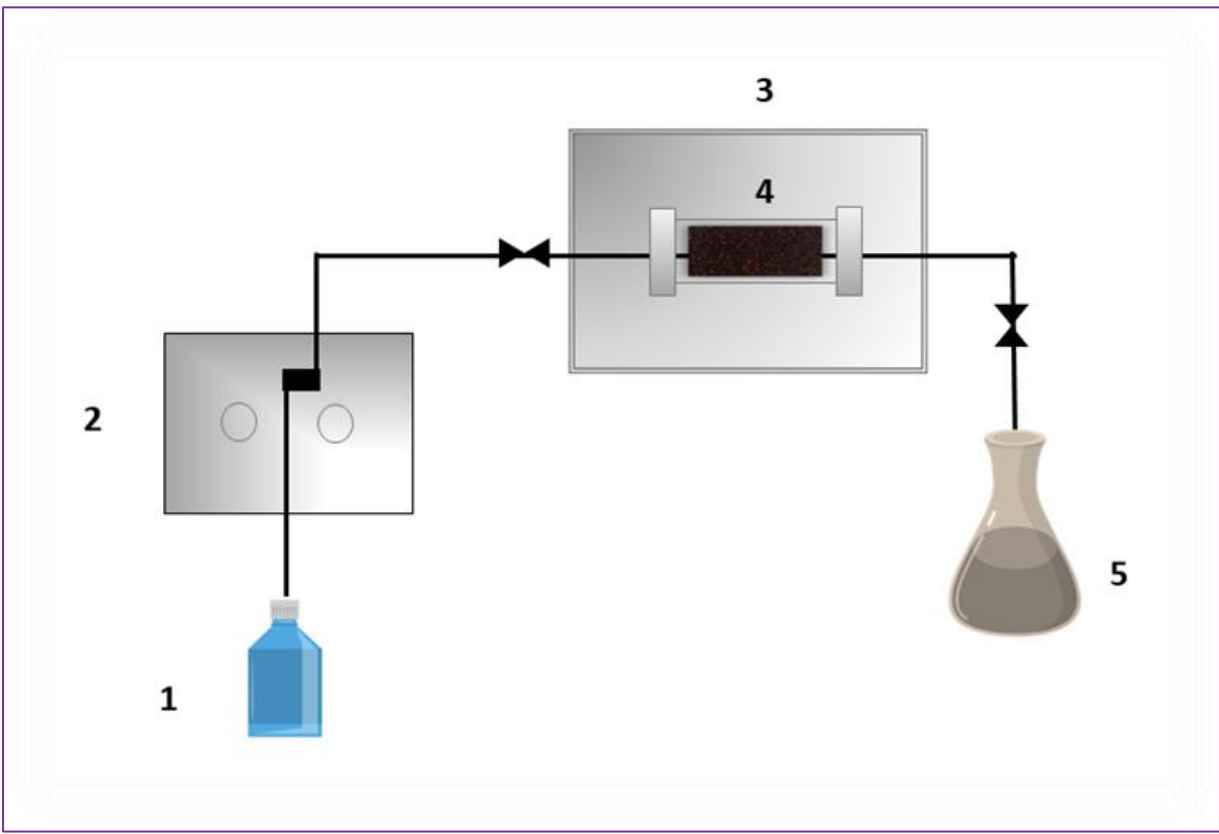
METHOD

Grape pomace pretreatment for extraction



Pressurized liquid extraction

Figure 1: Representation of the PLE of grape pomace from BRS Violeta.
1 – Solvent;
2 – Pump;
3 – Oven;
4 – Extraction cell;
5 – Extract collector.



Extraction conditions: 70% acetone at 10 MPa, with a flow rate of 5 mL/min for 30 minutes.

Flavonoid profile

Flavonoids were quantified following Padilha et al. (2017) with adaptations, using an Agilent 1260 LC with DAD (G1315D) and a Zorbax Eclipse Plus RP-C18 column (100 × 4.6 mm, 3.5 μm) with C18 pre-column (12.6 × 4.6 mm, 5 μm).

RESULTS & DISCUSSION

Table 1: Flavonoid profile of grape pomace from BRS Violeta extracted by PLE.

Flavonoids (mg/g)	Results (Average ± SD)
Hesperidin	0.723 ± 0.006
Naringenin	0.640 ± 0.001
Catechin	0.302 ± 0.001
Epigallocatechin gallate	0.076 ± 0.000
Epicatechin	0.109 ± 0.001
Epicatechin gallate	0.090 ± 0.000
Procyanidin B1	0.177 ± 0.001
Procyanidin B2	0.552 ± 0.001
Procyanidin A2	0.247 ± 0.001
Myricetin	0.655 ± 0.005
Quercetin 3-Glucoside	0.109 ± 0.004
Rutin	0.025 ± 0.002
Kaempferol 3-glucoside	0.114 ± 0.002
Isorhamnetin	0.099 ± 0.001
Cyanidin 3,5-diglucoside	0.153 ± 0.003
Petunidin 3-glucoside	0.615 ± 0.009

Results demonstrate the potential of PLE to recover flavonoids of pharmaceutical interest, particularly myricetin, which also exhibits anti-hyperglycemic activity. These findings indicate that BRS Violeta grape pomace is a promising source of bioactive compounds for health applications and metabolic disorder prevention.

CONCLUSION

PLE efficiently recovered a wide range of flavonoids from BRS Violeta grape pomace in just 30 minutes, demonstrating the method's effectiveness.

REFERENCES

Padilha, C. V. d. S., Miskinis, G. A., de Souza, M. E. A. O., Pereira, G. E., de Oliveira, D., Bordignon-Luiz, M. T., & Lima, M. d. S. (2017). Rapid determination of flavonoids and phenolic acids in grape juices and wines by RP-HPLC/DAD: Method validation and characterization of commercial products of the new Brazilian varieties of grape. Food Chemistry, 228, 106-115. <https://doi.org/10.1016/j.foodchem.2017.01.137>.