White grape (Vitis vinifera) pomace powder characterization for use as an ingredient in bakery products

BERTUCCI B. (1), RAYMUNDO G. (1), ANDRADE L. (1), PAVAN M. (1), ANDREOLA K. (1), MATUDA T. (1,2), TADINI C. (2,3)
1 Instituto Maude Tecnologia (IMT), S Caetano do Sul, SP, Brazil
2 Universidade de S Paulo (USP), Escola Politnica, Dept. of Chemical Eng., S Paulo, Brazil
3 Universidade de S Paulo, FoRC/NAPAN-Food Research Center, S Paulo, Brazil

In white winemaking, the grape pomace, obtained from pressing Viognier variety, pretreated with metabisulfite, consists of skins, seeds, and a high amount of residual sugars, because the juice is removed before fermentation. The pomace use is important for the environment and the economy since it would not be disposed on the soil and it would create value for circular economy development. The objective was to obtain and characterize flour from grape pomace, which composition depends on the pressing equipment. There were evaluated two pomace pressing degrees, with water content of 72.4 g/100g (HW) and 68.5 g/100g (LW). The HW was dried for 48h and the lowest for 24h at 45°C in an air-drying oven. Dried samples with 7.0 g/100g and 5.2 g/100g respectively, were milled in a domestic grinder and the powders were characterized according to water content, water activity, color, particle size, and flowability.
The water activity and CIELAB coordinates were higher for HW, due to the higher residual sugar content and Maillard reaction. The higher sugar content also indicates a powder agglomeration, which resulted in better flowability (LW: poor and HW: tolerable), facilitating its processing and storage. Despite these results, the lower sugar content of LW powder would be interesting to focus on high fiber content in low sugar products, by partial substitution of wheat flour. The substitution may alter the viscoelastic behavior of dough and the textural and sensory properties of baked goods containing grape pomace flour depending on the addition level and particle size. The LW presented a Sauter diameter of 360mm, closer to 250mm, which is the average diameter for wheat flour. The substitution of wheat flour with non-gluten white grape pomace flour will improve the product's nutritional value because of its fiber content. Since fruit pomace flour turns the dough less extensible and more tenacious, compromising the bread specific volume, the substitution would have a good effect in products like cakes and biscuits, in which gluten formation was not important. The white grape pomace does not incorporate sensorial grape taste and color characteristics, allowing its use in neutral flavors.

Acknowledgment: IMT[decision11883/45/17], FAPESP[grant2013/07914-8], and CNPq[grant309548/2021-7].