Possible uses of coffee by-products

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Objective

Cascara is the outer, dried skin of the coffee cherry. A by-product of coffee production, it ends up in very large quantities in African waters or in compost. However, its natural active ingredients and caffeine content make it a suitable substitute for coffee, as less and less coffee is grown nowadays.

The objective is to determine whether ultrasonic cell disruption can extract more of the component at a lower temperature in a shorter time.

Materials and Methods

pH

- S40 SevenMulti™ pH meter
- 3 replicates at a measurement temperature of 23±1°C

Color

- ColorLite sph 850 spectrometer
- CIE Lab - L* a* b* parameters
- Dried Cascara, distilled water at 40°C and 60°C
- 3 replicates at a measurement temperature of 23±1°C

Brix % Refractive index

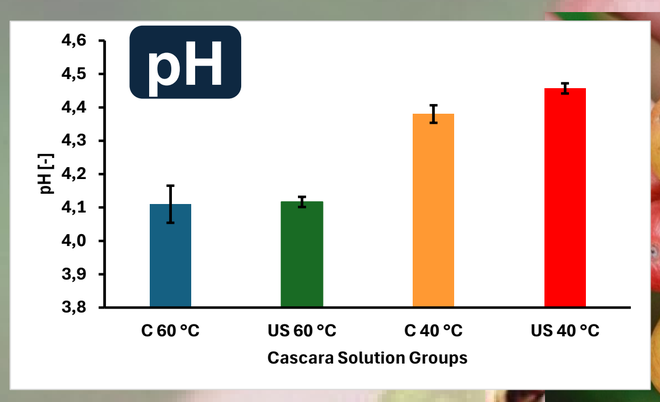
- Abbemat 300 Refractometer
- 3 replicates at a measurement temperature of 23±1°C

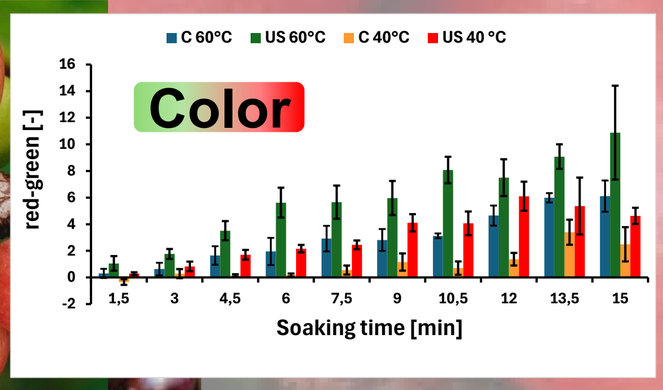
Density

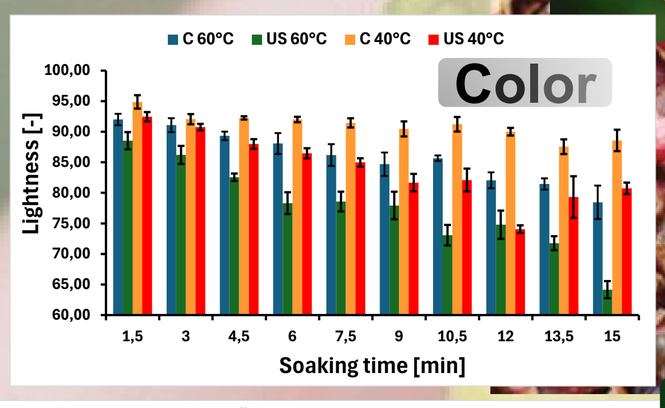
- DMA 1001 Density meter
- 100 % consistent results due to repeatability of 0.00005 g/cm³
- 3 replicates at a measurement temperature of 23±1°C

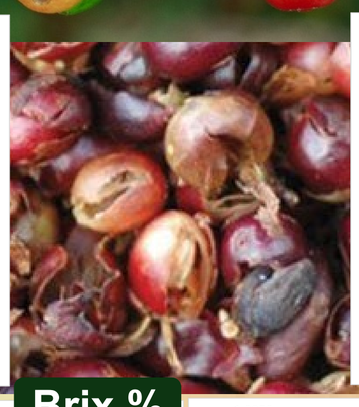
Materials and Methods

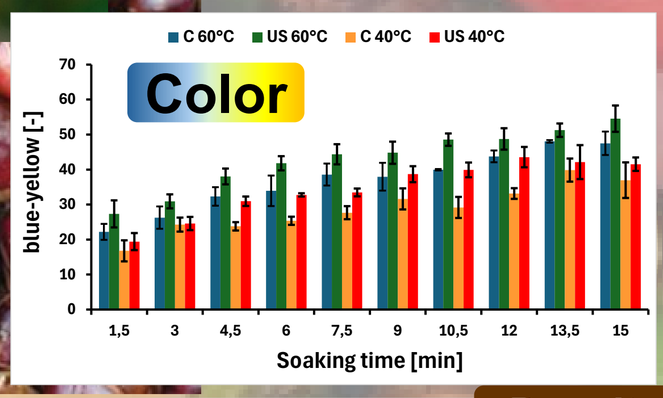
Results





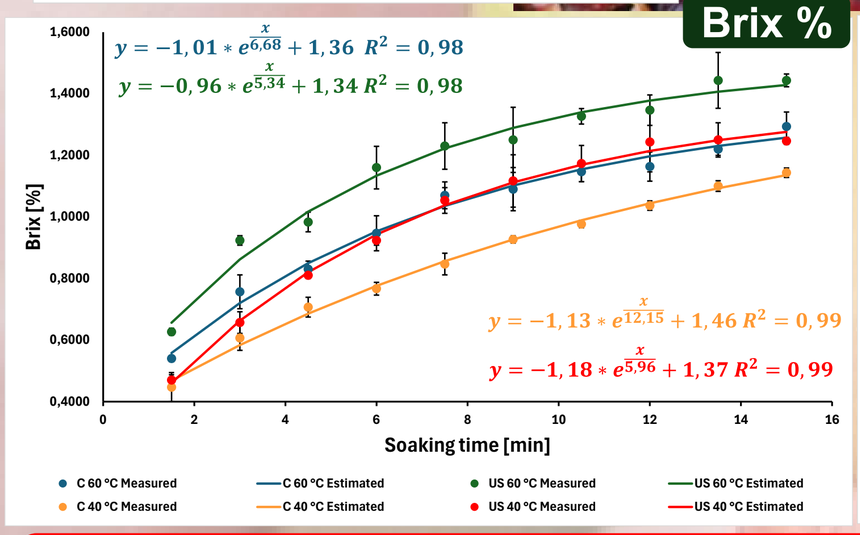


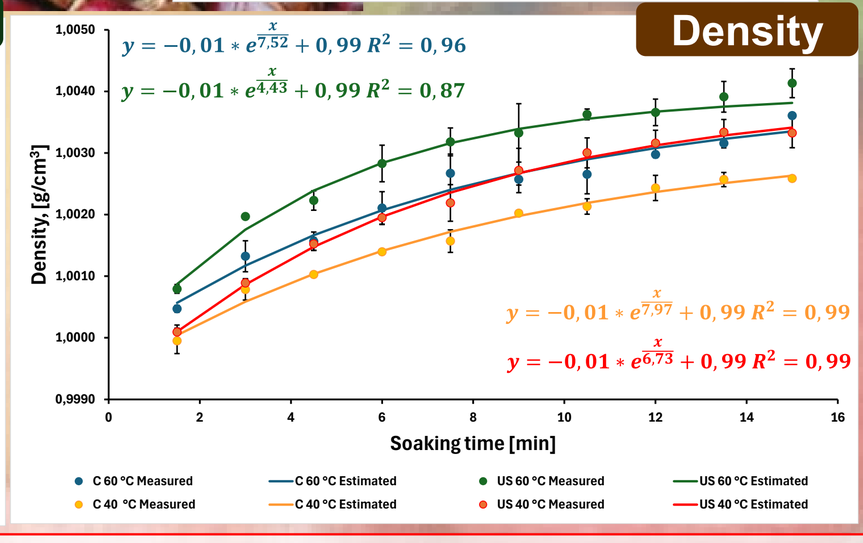


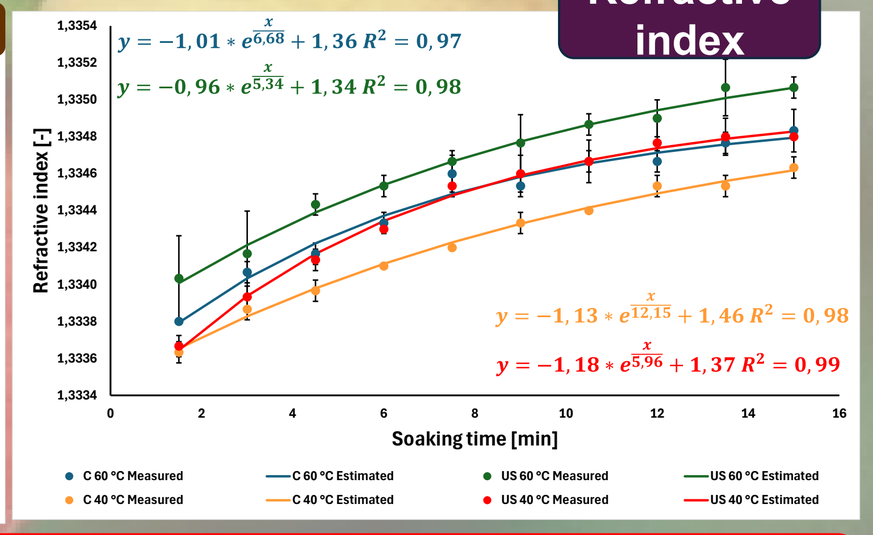


Conclusion

The ultrasonic treatments, in particular the combined heat and ultrasonic treatment at 60 °C, increased the soluble solids content of Cascara solutions, as evidenced by the increase in Brix%, density and refractive index. The effect increased with increasing pH values. Samples treated with Ultrasonic at 40 °C showed more stable results, while Ultrasonic at 60 °C provided the highest efficiency in a shorter time. The ultrasonic process also improved extraction efficiency and reproducibility.







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