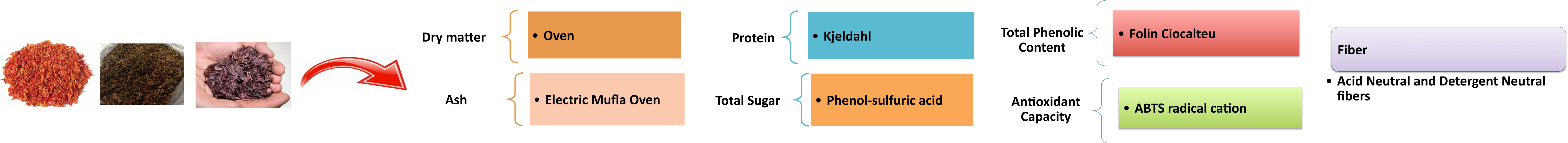


Introduction

Agrofood byproducts have gathered the interest of both the scientific community and the industry as they represent a relatively cheap and sustainable source of natural compounds that can be used in an array of different applications from energy production to the extraction of added value ingredients to be used in food, feed, cosmetics or nutraceutical products among others [1]. Wine (grape pomace and stalks) and tomato industry byproducts contain a wide range of potential bioactive compounds that whose extraction can be considered relevant. However, most of the current approaches lack a systematic integrated extraction processes to extract the most value from these byproducts [2]. Therefore the present work aims to provide a basic characterization that will function as a base from which byproduct valorization strategies can be developed.

Methods



Results

By-products Characterization (g/100 g)

Table1. Tomato by-products Characterization (g/100g)		
Sample	Dried Tomato by-products	Fresh Tomato by-products
DM	87.90±0.28	32.82±0.92
Ash	2.98±0.16	3.35±0.01
Protein	2.24±0.09	1.14±0.06
Total Sugar	5.37 ± 0.08	1.70 ± 0.16

Table2. Grape by-products characterization (g/100g)				
Sample	White grape pomace	White grape stalks	Red grape pomace	Red grape stalks
DM	27.29±0.35	23.58±0.09	31.01±0.47	30.63±0.22
Ash	1.23±0.01	1.51±0.02	2.50±0.01	1.93±0.01
Protein	0.36±0.02	0.31±0.0002	0.34±0.02	0.36±0.02
Total Sugar	3.01±0.29	1.84±0.13	5.98±0.05	1.94±0.04

By-products Characterization (mg of Gallic acid equivalents/100 g or mg of Ascorbic acid equivalents/100 g)

Table3. Tomato by-products characterization (mg of Gallic acid equivalents /100 g or mg of Ascorbic equivalents/100g)		
Sample	Dried Tomato by-products	Fresh Tomato by-products
Total Phenolic Content	1.41±0.06	0.24±0.05
Antioxidant Capacity	1.15±0.16	0.58±0.24

Table4. Grape by-products characterization (mg of Gallic acid equivalents /100g or mg of Ascorbic equivalents/100g)				
Sample	White grape pomace	White grape stalks	Red grape pomace	Red grape stalks
Total Phenolic Content	4.03±0.01	3.02±0.04	6.62±0.05	9.75±0.03
Antioxidant Capacity	5.18±0.66	8.30±0.69	22.65±0.84	34.56±0.94

By-products Fiber (g/100 g)

Table5. Tomato by-products Fiber (g/100 g)		
Sample	Dried Tomato by-products	Fresh Tomato by-products
Total Fibre	69.80±0.67	25.52±0.26
Total Lignin	9.90±0.23	4.17±0.49
Cellulose	11.39±0.66	2.37±0.25
Hemicellulose	19.77±0.10	2.98±0.13
Water Soluble Pectin (PSA)	5.36±0.81	3.83±0.73
Soluble Pectin in Chelating Agent (PAQ)	4.43±0.39	0.94±0.40
Hydroxide Soluble Pectin (PSH)	0.85±0.04	0.33±0.28

Table6. Grape by-products Fiber (g/100 g)				
Sample	White grape pomace	White grape stalks	Red grape pomace	Red grape stalks
Total Fibre	15.78±0.76	12.95±0.80	17.36±0.96	14.79±0.73
Total Lignin	5.04±0.07	3.36±0.39	5.84±0.40	4.31±0.04
Cellulose	1.48±0.68	3.85±0.04	2.10±0.04	5.31±0.69
Hemicellulose	1.84±0.16	1.58±0.44	2.60±0.09	2.10±0.28
Water Soluble Pectin (PSA)	0.82±0.18	1.84±0.75	0.96±0.06	2.00±0.73
Soluble Pectin in Chelating Agent (PAQ)	0.41±0.06	1.04±0.19	0.89±0.08	1.98±0.61
Hydroxide Soluble Pectin (PSH)	0.87±0.15	0.34±0.06	0.86±0.28	0.37±0.31

Conclusions

Tomato byproducts, which were measured in two samples respectively, illustrated 69.80% and 25.52% fiber content and also winery byproducts whose samples were measured in two white and red grapes illustrated 15.78% and 17.36% fiber content, making them excellent candidates for nutraceutical, medical, and food applications. They are also good sources of lignin, cellulose, and hemicellulose and which makes them an interesting source for the development of new environmentally friendly composites.

References

[1] Maier, T.; Schieber, A.; Kammerer, D. R.; Carle, R. (2009).
[2] Viveros, A.; Chamorro s.; Pizarro, M.; Arija, I.; Centeno, C.; Brenes, A. (2011).

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