

BACKGROUND

The conservation of agro-industrial byproducts is crucial for their sustainable utilization in animal nutrition. Hot air dehydration is an effective approach for preservation allowing the inhibition of microbial activity and reduction of weight and volume for easier transport and storage.

OBJECTIVES

The effect of dehydration conditions on color, water activity (a_w), chemical and nutritional composition, antioxidant capacity and cost were evaluated.

RESULTS

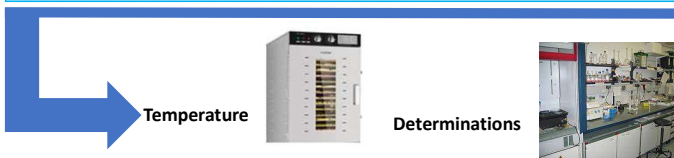
Table 1. Effect of temperature in moisture, colour and a_w values.

Byproducts	Temperature (°C)	Physicochemical characteristics			
		Initial Moisture (%)	Final Moisture (%)	Delta E CieLab	Water Activity (a _w)
Sweet Potato	80	85	6.0	17.8	0.26
	70	85	6.7	17.6	0.30
Tomato Pomace	80	68	4.0	11.8	0.29
	70	71	4.7	10.5	0.26
Carrot	80	88	6.7	10.1	0.32
	70	88	6.7	19.7	0.28
	60	88.0	7.3	10.5	0.33

Table 2. Electricity cost in the hot air dehydration treatments (considering an electricity cost of 0.15 €/kwh)

Byproducts	Temperature (°C)	Process Duration (h)	Load (kg/m ²)	Process Electricity Cost (€/kg)
Sweet Potato	80	6	1.8	0.60
	70	6:30		0.54
	80	4		0.80
Tomato Pomace	70	5:30	0.9	0.92
	80	7		0.50
	80	8		0.48
Carrot	60	8:30		0.42

METHODOLOGY



- TP – 70, 80 °C
- C – 60, 70, 80 °C
- SP – 70, 80 °C
- Physical
- Chemical and nutritive characterization with freeze-dried samples used as control

CONCLUSIONS

- Dehydration of tomato pomace at 80 °C and carrot at 60 °C ensure the stability of the product with lower cost, without chemical and nutritional changes.
- Dehydration of sweet potato at 70 °C and 80 °C ensures product stability but causes a significant reduction in starch and sugar so, lower temperatures should be tested.

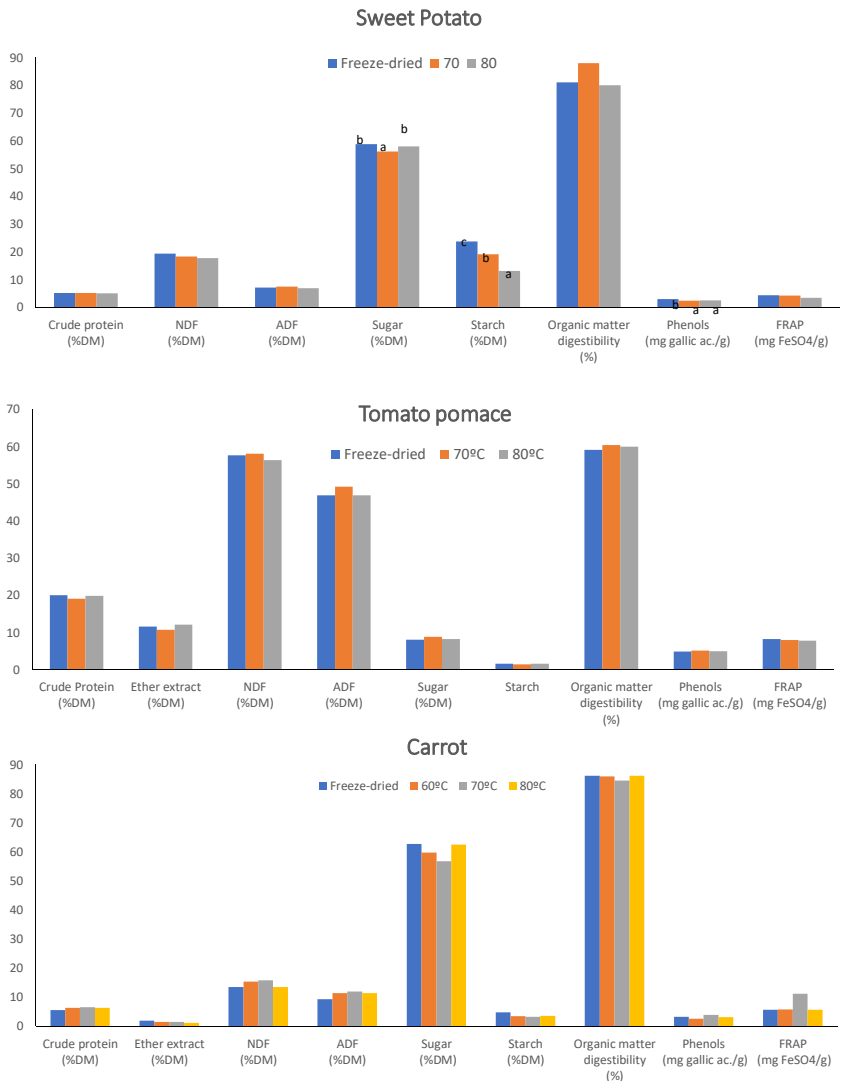


Figure 1. Effect of dehydration temperature on chemical composition and nutritive value of tomato pomace, carrot and sweet potato byproducts

