

IDENTIFICATION OF CASHEW APPLE VALORIZATION PATHWAYS BY PHYSICO-CHEMICAL CHARACTERIZATION

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INTRODUCTION

The cashew tree is a tropical and subtropical tree belonging to the *Anacardiaceae* family, to the genus *Anacardium* Linn and to the *Anacardium occidentale* Linn var. *nanum*. It reveals two morphological parts of interest notably the apple and the cashew nut. Indeed, the cashew apple and the cashew nut represent the fruits of the cashew tree. The apple is considered to be the "false fruit" while the term "real fruit" is attributed to the nut.

The apple is a hard, pear-shaped, green fruit that turns red, yellow or orange during ripening. Consume as a snack or to enhance dishes, cashew nut contains a wide variety of vitamins and minerals as well as active ingredients beneficial to health. Indeed, cashew nut and cashew apple contain interesting therapeutic properties (Kella et al. 2017). Ivory Coast became the world's leading producer of cashews in 2016 with 725,000 tones, or 25% of the market. By 2020, it targets 1 million tones. To achieve this goal, it must meet the challenge of transformation.

OBJECTIVE

This study aims to characterize the cashew apple in order to identify its characteristics, with a view to better valorization. For that purpose, two varieties of cashew apples from Ivory Coast, from two different production zones were selected and dried before physicochemical characterization.



Cashew apple

Cashew nut

Figure1: Cashew apple and cashew nut, the cashew fruit in two parts (source: Wikipedia)

MATERIAL AND METHODS

Table 1: Samples studied and factors that differentiate them

Sampling	Sampling area	Types of sampling	Apple color	Drying and juice extraction methods
First	Area 1	Whole apple	Red	45 ° C oven and sun
			Yellow	45 ° C oven and sun
		Bagasse	Red	45 ° C oven and sun
			Yellow	45 ° C oven and sun
Second	Area 2	Whole apple	Red	45 ° C oven and sun
			Yellow	45 ° C oven and sun
		Juice	Red	Direct pressing
			Yellow	Direct pressing
Third	Area 2	Juice	Red	Grinding and pressing
			Yellow	Grinding and pressing

Table 2: Physicochemical composition of red and yellow cashew apples

Samples	PRSE1	PRSE2	PRSS1	PRSS2	PISE1	PISE2	PISS1	PISS2
Dry matter (%)	84.78 ± 0.9	91.98 ± 0.2	84.91 ± 2.4	85.97 ± 2.6	84.8 ± 1.5	86.2 ± 3.7	84.79 ± 2.3	85.09 ± 2.1
Protein (%DM)	9.51 ± 0.12	10.85 ± 0.03	6.97 ± 0.17	5.43 ± 0.82	7.94 ± 0.04	6.24 ± 0.24	8.59 ± 0.16	5.4 ± 0.28
Total sugars (g/100g DM)	24.19 ± 0.5	32.21 ± 3.5	37.75 ± 2.3	50.62 ± 0.7	28.3 ± 0.0	53.47 ± 2.9	24.17 ± 1.6	37.88 ± 4
Lipids (g/100g DM)	4.06 ± 0.08	4.59 ± 0.03	3.16 ± 0.07	2.42 ± 0.04	3.77 ± 0.02	2.5 ± 0.04	3.2 ± 0.13	2.12 ± 0.04

I-Study material

1-Area concerned by the study

Two cities of Ivory Coast (Yamoussokro and Korhogo)

2-Collection of cashew samples

Two colors (red and yellow) of ripe apples were selected.

II-Methodology

1-Sample processing

- Drying in an oven (controled T°C)
- Sun Drying
- Pressing to remove juice and dry the residues (bagasse)

2-Evaluation of the physico-chemical parameters of cashew samples

- ✓ Determination of dry matter
- ✓ Protein assay with Duma method
- ✓ Determination of total sugars was carried out by the Bertrand method.
- ✓ Fat contents of the samples are determined using a Soxtherm S3060K from the Gerhardt brand.

CONCLUSION

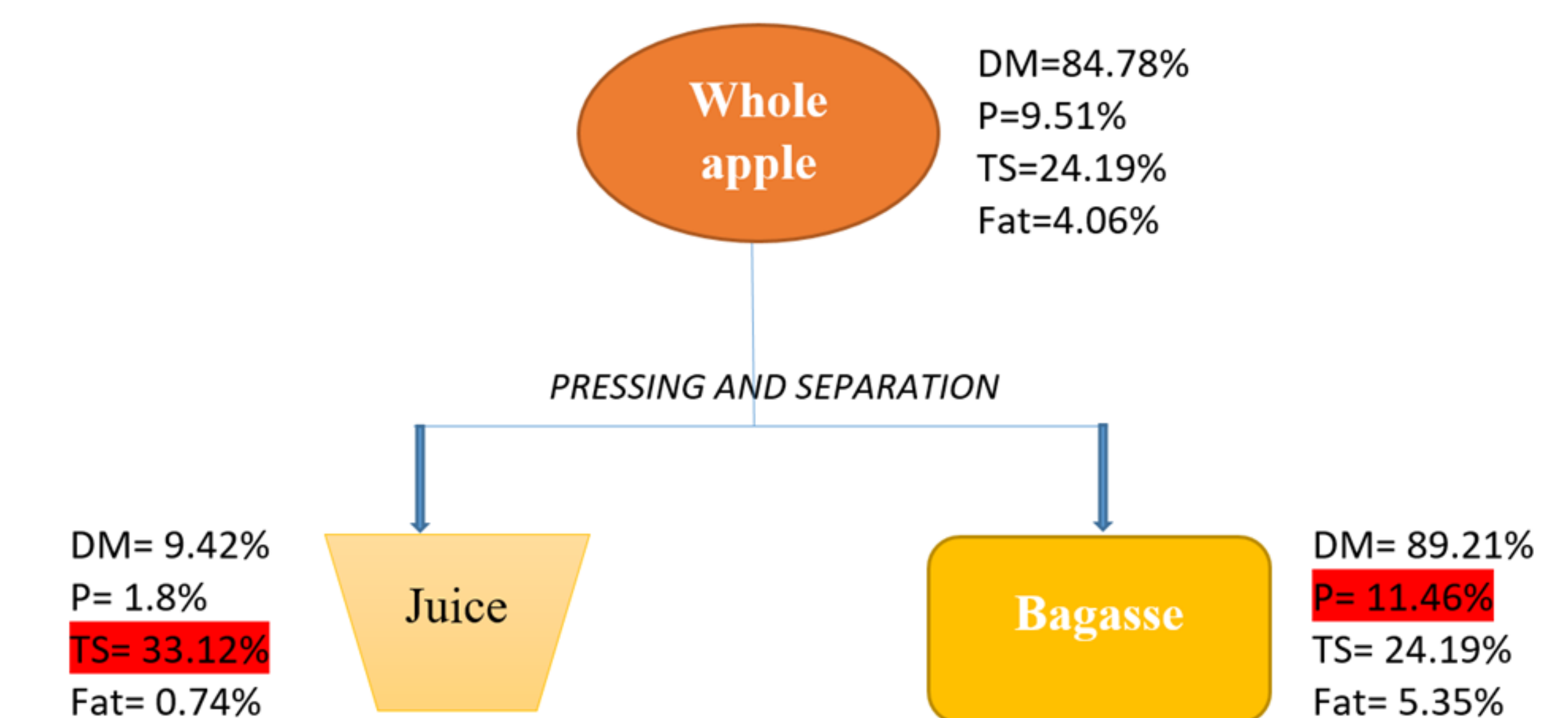


Figure2: Example of valorization of the apple in bagasse and juice with the different compositions

The cashew apple is an agro-resource with high recovery potential which could interest certain industries such as the food and pharmaceutical industries.

As the drying kinetics of the whole apple are longer, we could consider a valorization of the apple on two levels. First get a juice. After extracting the juice, we get a by-product (bagasse). This part is of interest compared to the whole apple. On the one hand, it presents faster drying kinetics. And on the other hand, it could allow the efficient use of readily available and inexpensive sources of protein and micronutrients for food formulations.

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