STUDY ON THE EFFECT OF THE CHOCOLATE MANUFACTURING PROCESS ON ITS ANTIOXIDANT CAPACITY

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Objectives

- Determine the effect of the chocolate making process on the antioxidants from cocoa.
- Identification of the key stages and their optimal conditions to retain antioxidant activity.

22,4 mmol / 100 g

4,97 mmol / 100 g

8,32 mmol / 100 g

4,57 mmol / 100 g

Figure 2. Differences between the antioxidant content of cocoa, chocolate, beverages and nuts

Conclusions

- Reduction of antioxidant capacity due to process.
- Key stages
  - Harvesting → Cocoa bean with a yellowish-reddish hue
  - Fermentation → Water blanching and 5-6 days
  - Drying → Sun drying or artificial drying at 70 ºC
  - Roasting → 110 ºC / 85 min

Chocolate production

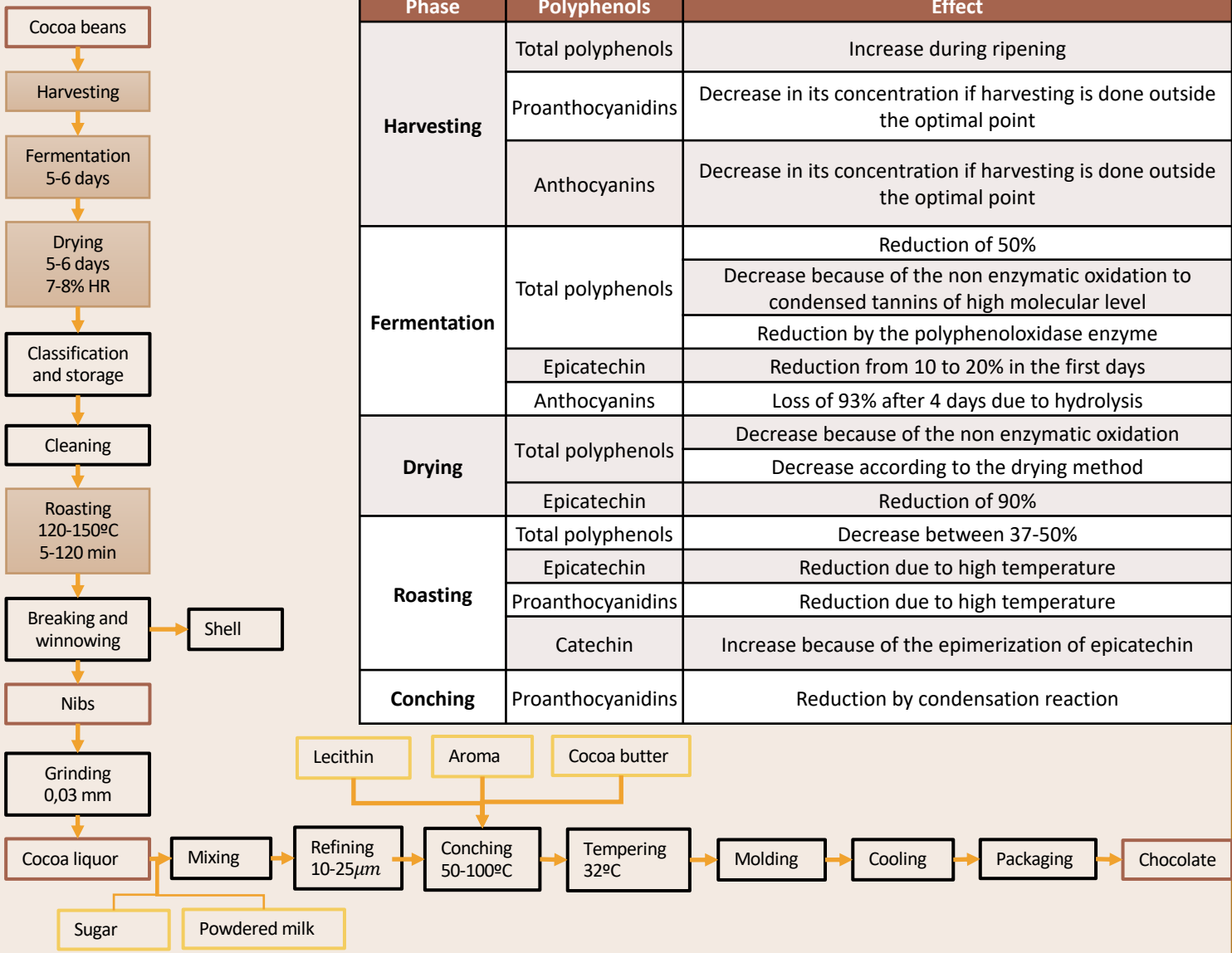

Figure 1. Flow diagram of chocolate production from cocoa beans.

Table 1. Effect of the stages of the process of obtaining the cocoa and of the elaboration of chocolate on the polyphenols of the cocoa.

Phase	Polyphenols	Effect
Harvesting	Total polyphenols	Increase during ripening
	Proanthocyanidins	Decrease in its concentration if harvesting is done outside the optimal point
	Anthocyanins	Decrease in its concentration if harvesting is done outside the optimal point
Fermentation	Total polyphenols	Reduction of 50%
		Decrease because of the non enzymatic oxidation to condensed tannins of high molecular level
		Reduction by the polyphenoloxidase enzyme
	Epicatechin	Reduction from 10 to 20% in the first days
	Anthocyanins	Loss of 93% after 4 days due to hydrolysis
Drying	Total polyphenols	Decrease because of the non enzymatic oxidation
		Decrease according to the drying method
	Epicatechin	Reduction of 90%
Roasting	Total polyphenols	Decrease between 37-50%
	Epicatechin	Reduction due to high temperature
	Proanthocyanidins	Reduction due to high temperature
	Catechin	Increase because of the epimerization of epicatechin
Conching	Proanthocyanidins	Reduction by condensation reaction