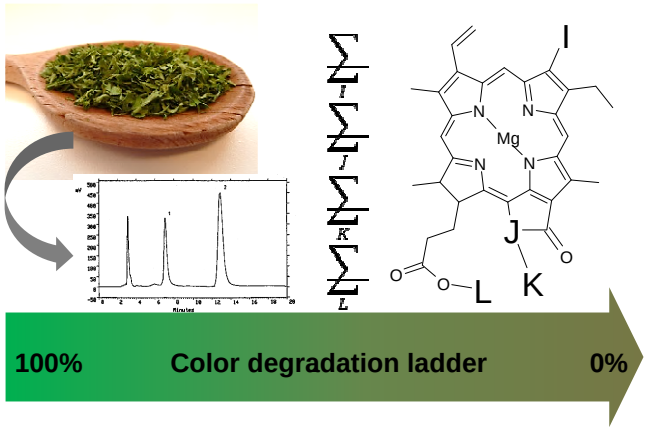
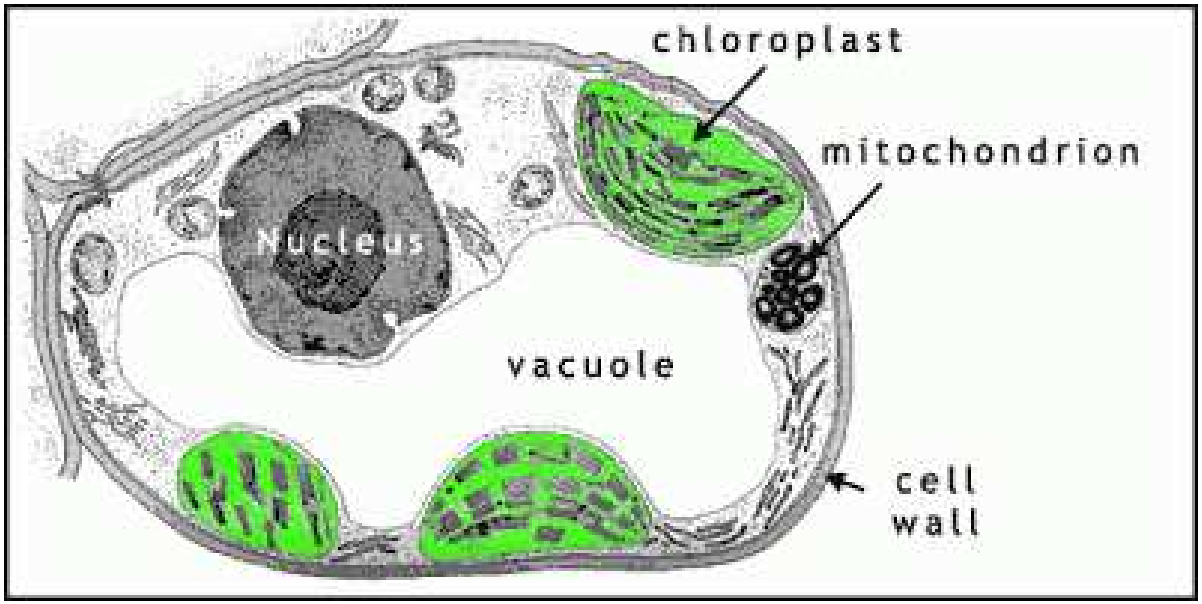
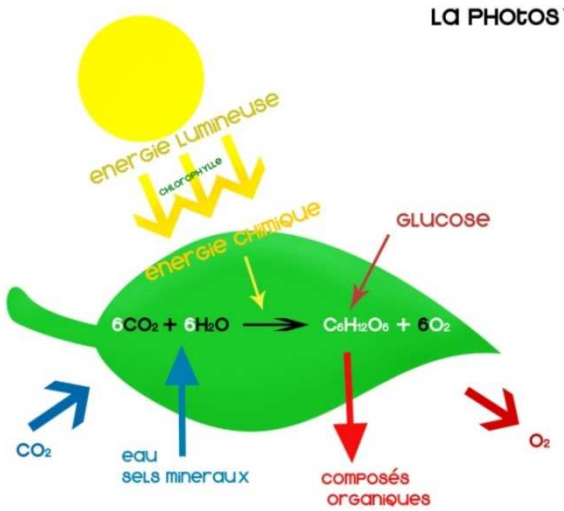
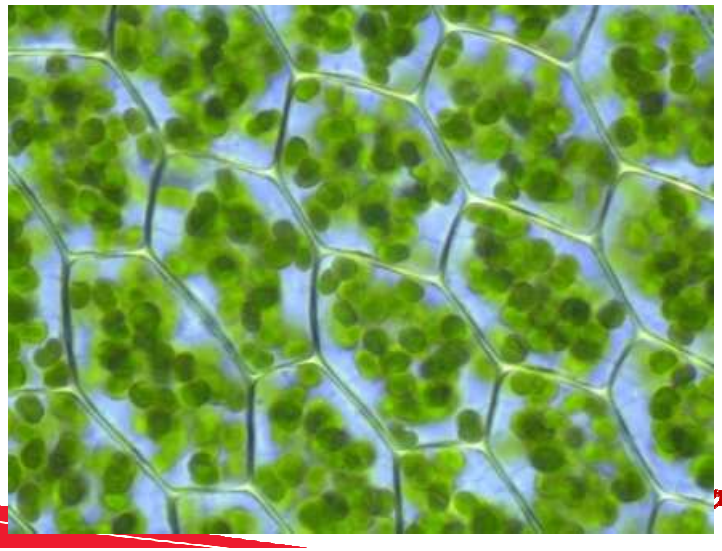
CHLOROPHYLLES ET DEVENIR DANS LES FINES HERBES SÉCHÉES



CELLULE DES VEGETAUX PHOTO-SYNTHÉTIQUES





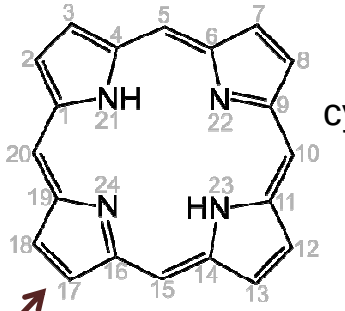


APRÈS LA RÉCOLTE DES VÉGÉTAUX

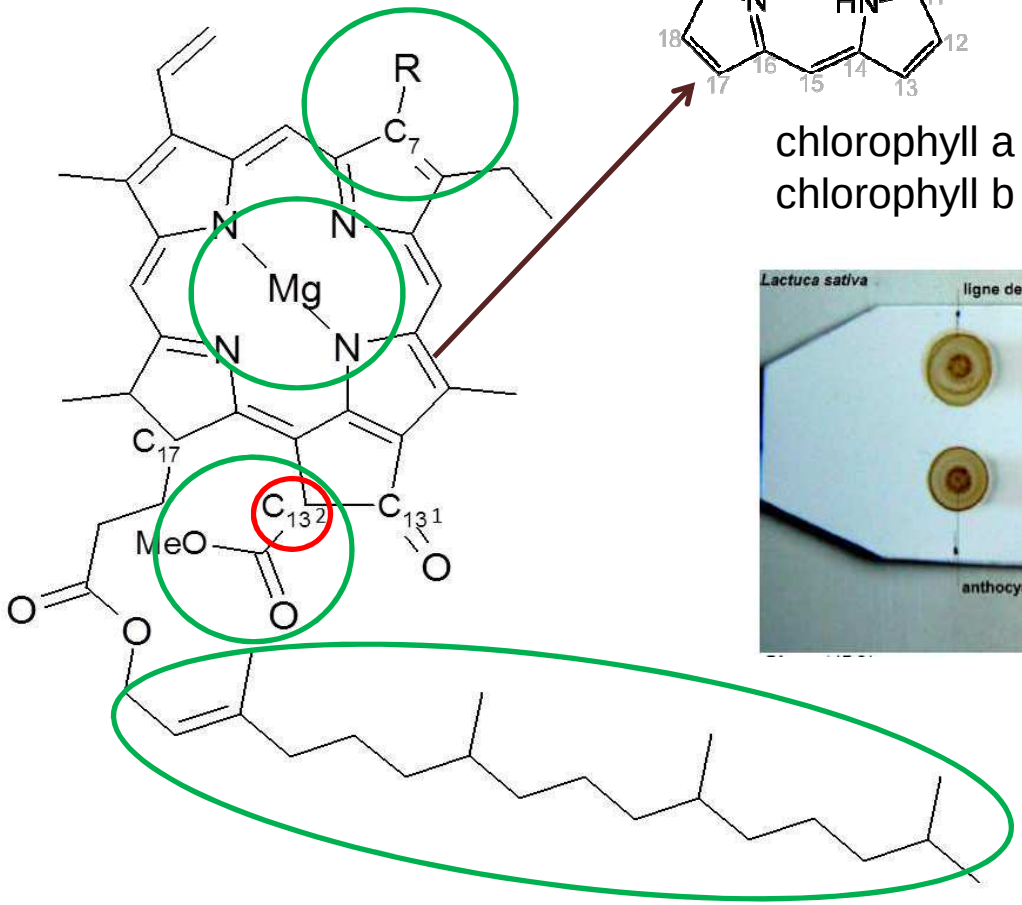
Plante vivante → **Plante sèche**

1) Récolte
2) Sèchage
3) Débactérisation
4) Stockage

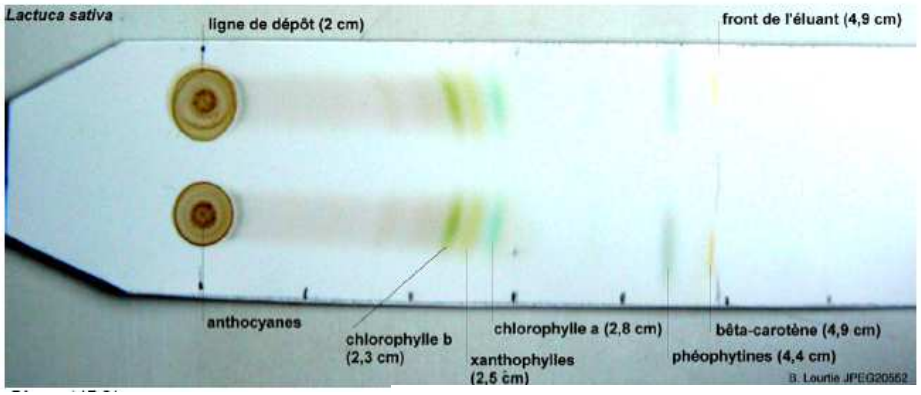
CHLOROPHYLLES

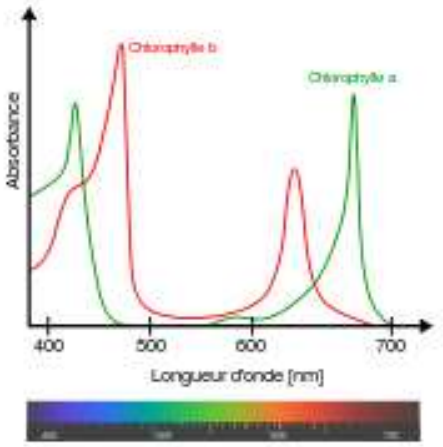


cycle porphyrique



chlorophyll a (R=CH3) (bleu-vert)
chlorophyll b (R=CHO) (vert)

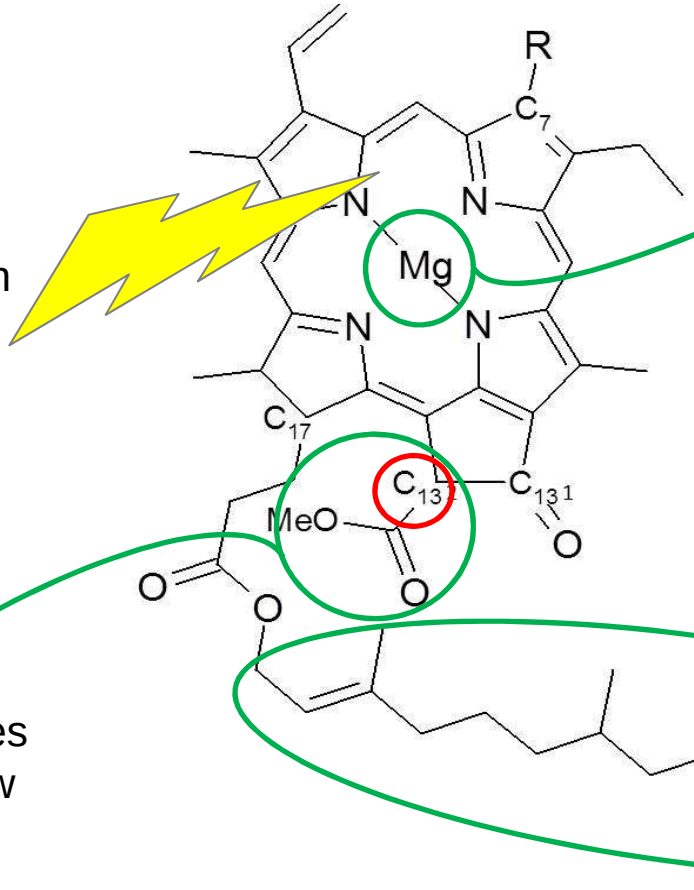




- **Les chlorophylles représentent 0.6 à 1.2% de la matière sèche.**
- **Le rapport de concentration en chlorophylle a sur chlorophylle b est compris entre 2.5 et 3.5**

CHLOROPHYLLES - dégradation

Oxydation – photooxydation (ν + O2)



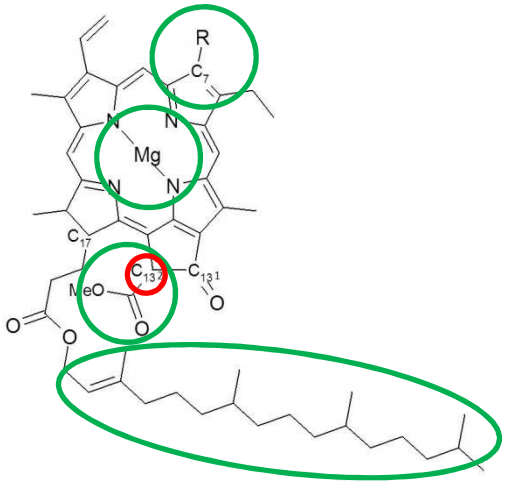
- acidité : vacuole et membranes cellulaires se délitent
- chaleur modérée

Pour toutes valeurs Aw

Chaleur
Pour toutes valeurs Aw

Enzymatique
Aux Aw élevées

VOIES DE DEGRADATION DES CHLOROPHYLLES



Plantes sèches

Cycles ouverts

CHLOROPHYLL a'&b'

oxydation,
photo-oxydation

epimérisation

CHLOROPHYLL a&b

- phytol

- CO2Me

- Mg2+

CHLOROPHYLLIDE
aa'&bb'

PYROCHLOROPHYLL a&b

PHEOPHYTIN aa'&bb'

- CO2Me

- phytol

- Mg2+

- CO2Me

- phytol

PYROCHLOROPHYLLIDE
a&b

PYROPHEOPHYTIN
a&b

PHEOPHORBIDE
aa'&bb'

- phytol

- Mg2+

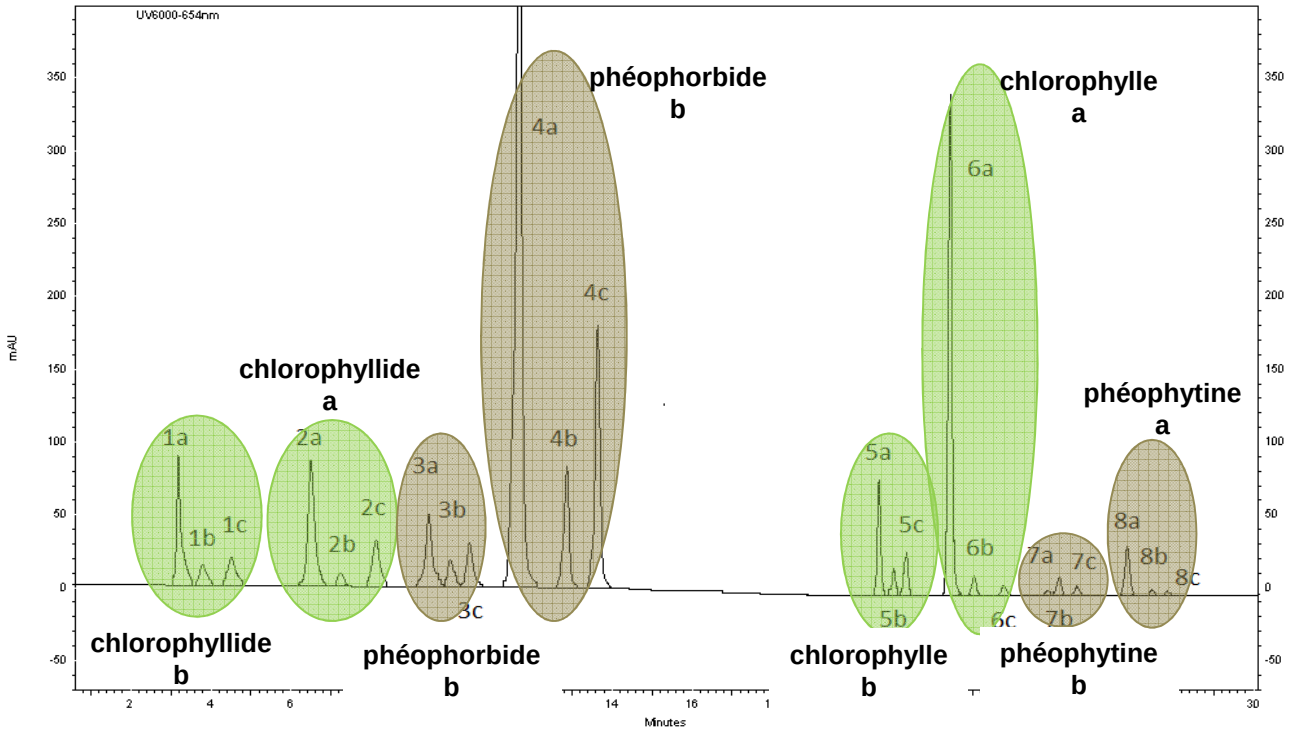
- CO2Me

PYROPHEOPHORBIDE a&b

- Mg2+

ANALYSE DES COMPOSÉS DE DEGRADATION COLORÉS

(analyse Centre des Sciences Analytiques)



24 composés détectables

λ = 654 nm

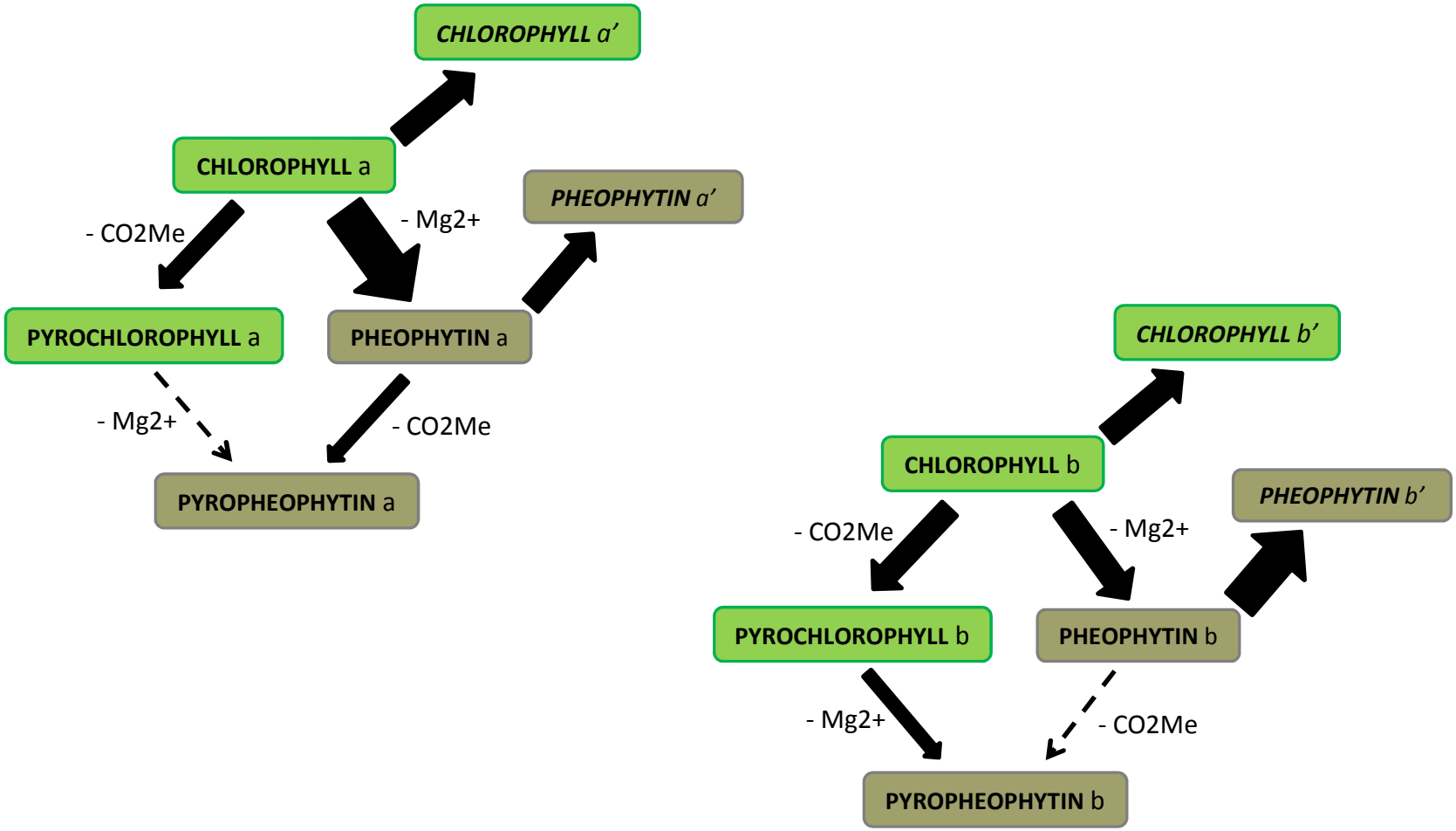
Temps	MeOH	Eau	Acétone	Débit (ml/min)
0	80	20	40	0.5
2	80	20	0	0.5
15	65	5	30	0.8
18	0	0	100	1

ANALYSE DES COMPOSÉS DE DEGRADATION COLORÉS

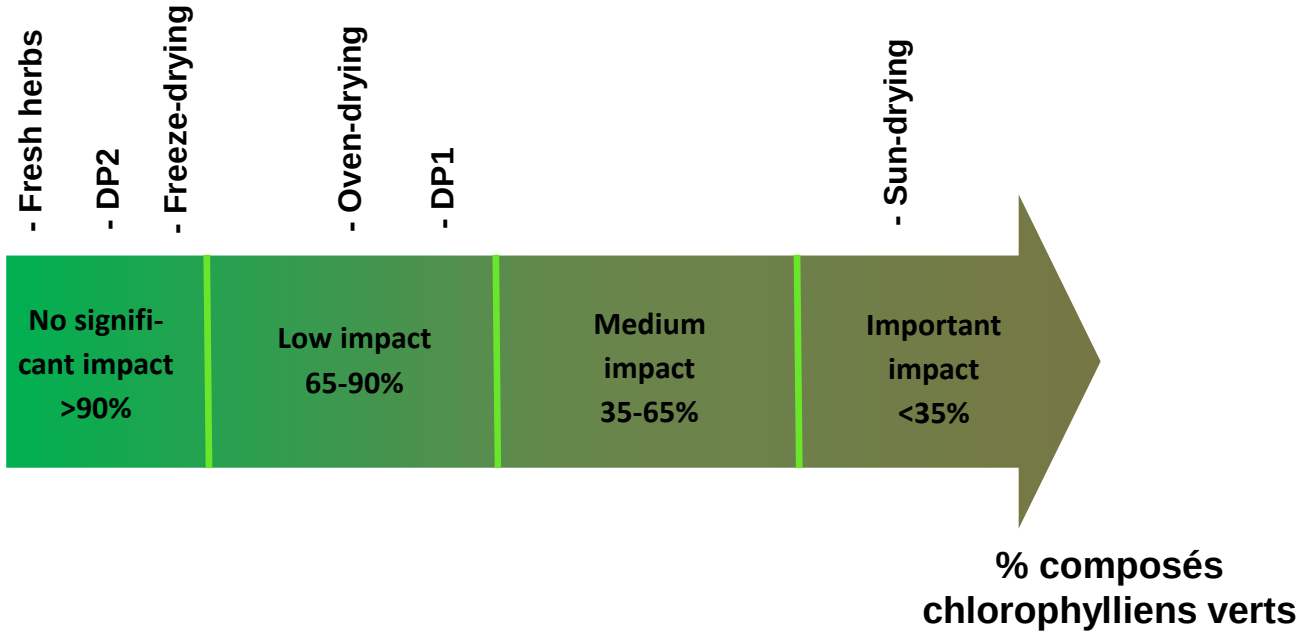
Synthèse
Extraction chlorophylles feuille épinard fraîches.
Etalons + Synthèse de tous les composés de dégradation

Quantification
Approximation au 1^{ier} degré (vert et marron, étalonnage externe chloro a&b + phéo a&b) du spectre et de sa déformation par l'élution.

CINÉTIQUE DIFFÉRENTE SELON LE TYPE DE CHLOROPHYLLE



ECHELLE DE QUANTIFICATION DE LA DEGRADATION DESCHLOROPHYLLES APRES PROCESS

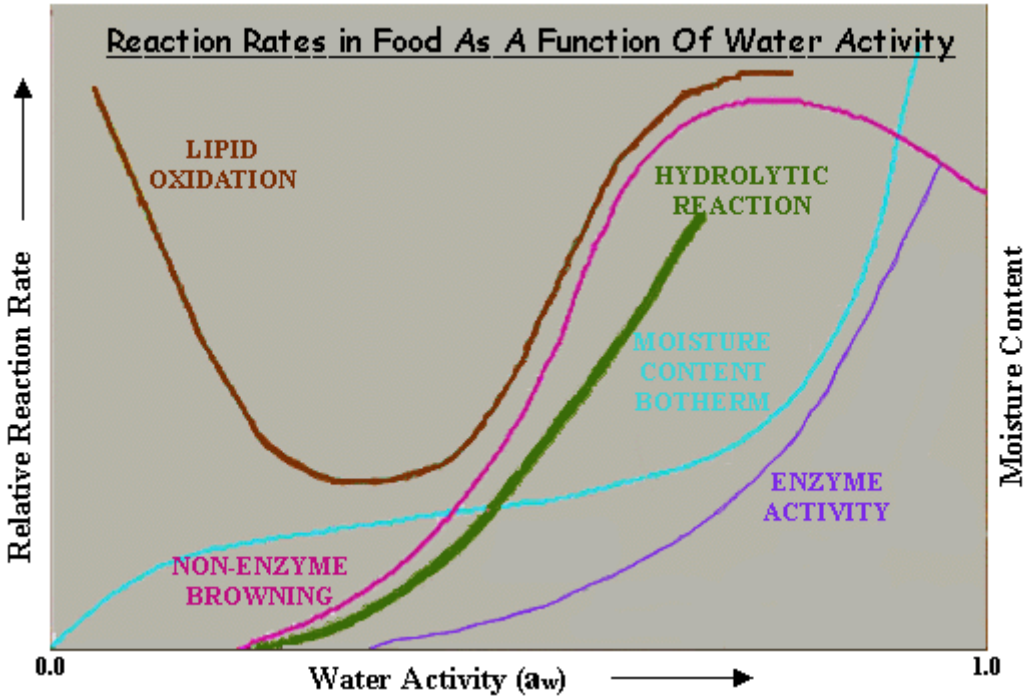


UNE FOIS EN EMBALLAGE, OXYDATION ET PHOTOOXYDATION

Cycles ouverts

oxydation,
photo-oxydation

CHLOROPHYLL a&b

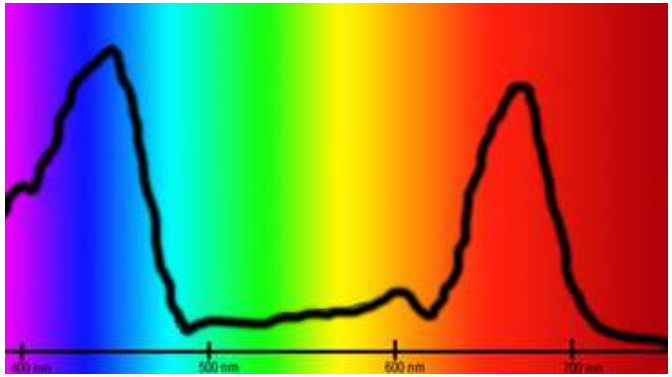


UNE FOIS EN EMBALLAGE, OXYDATION ET PHOTOOXYDATION

The Influence of Light of Different Wavelengths on Chlorophyll-Containing Foods

M. Thron, K. Eichner, G. Ziegleder Volume 34, Issue 8, 2001, pp. 542–548

The greatest quantum-dependent sensitivity was detected around 650 nm, the lowest around 500 nm.



It was shown that the quanta absorbed by the absorption maximum of chlorophyll at 650 nm are most effective to photooxidation.

When selecting packaging for chlorophyll-containing foods, the two critical spectral ranges around 400 nm and 650 nm need special consideration.

Foods mainly irradiated by fluorescent light need more protection in the lower wavelength range and foods irradiated by natural daylight in the longer wavelength range.

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Quantitation of Chlorophylls and 22 of Their Colored Degradation Products in Culinary Aromatic Herbs by HPLC-DAD-MS and Correlation with Color Changes During the Dehydration Process

Jean-Louis Lafeuille *, Stéphane Lefèvre , and Julie Lebuhotel
EMEA Centre of Analytical Sciences, McCormick France, 999 Avenue des Marchés, 84200 Carpentras, France

J. Agric. Food Chem., 2014, 62 (8), pp 1926-1935
DOI: 10.1021/jf4054947
Publication Date (Web): February 1, 2014

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Lafeuille, Jean-Louis | Search

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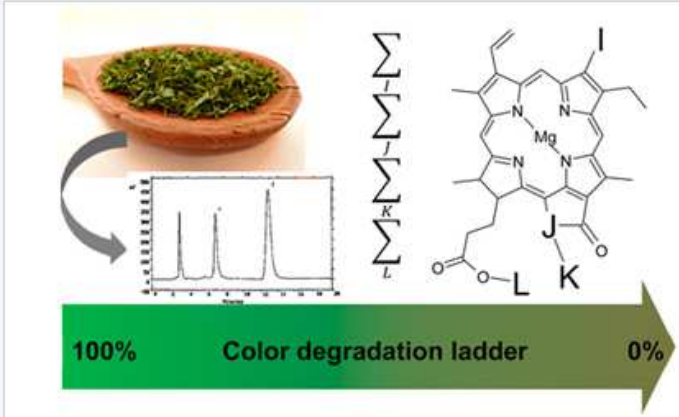
Abstract



Chlorophylls and their green and olive-brown derivatives were successfully separated from culinary herb extracts by HPLC with photodiode-array and mass spectrometry detection. The method involved a ternary gradient elution and reverse-phase separation conditions capable of resolving 24

McCormick brings passion to flavour

McCORMICK