En toutes choses, il faut considérer la fin

Partons de la cuisine

Pourquoi ?

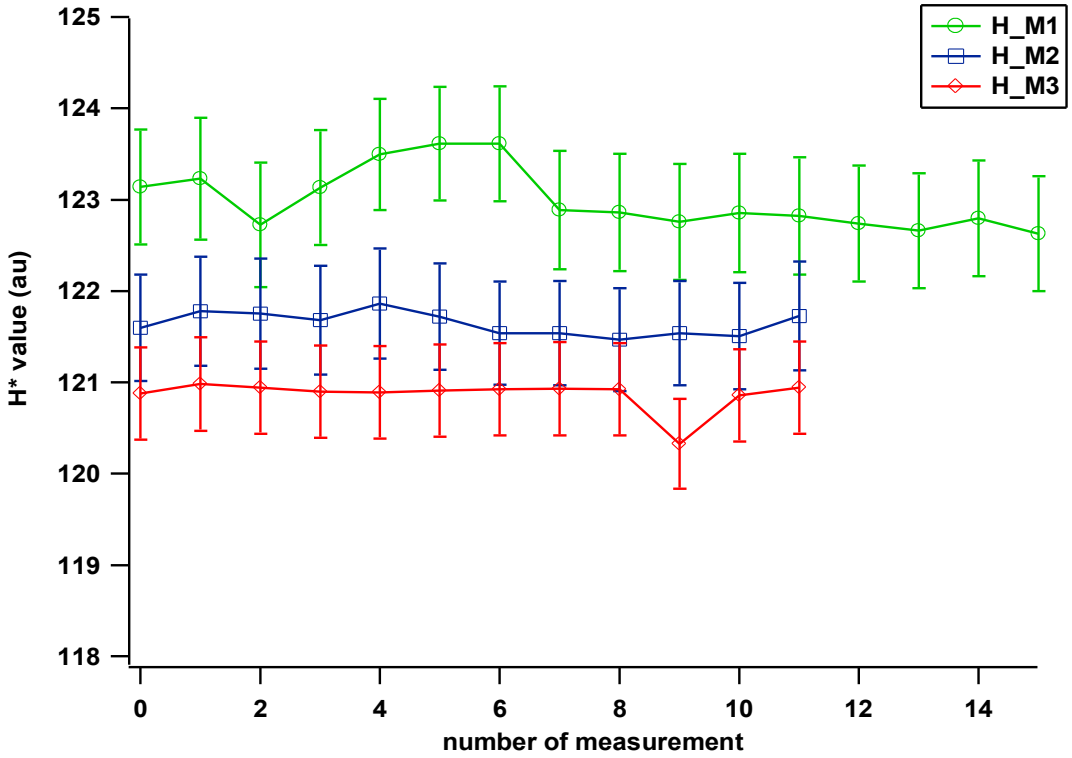
Parce que nous ne sommes pas de purs esprits

En toutes choses, il faut considérer la fin

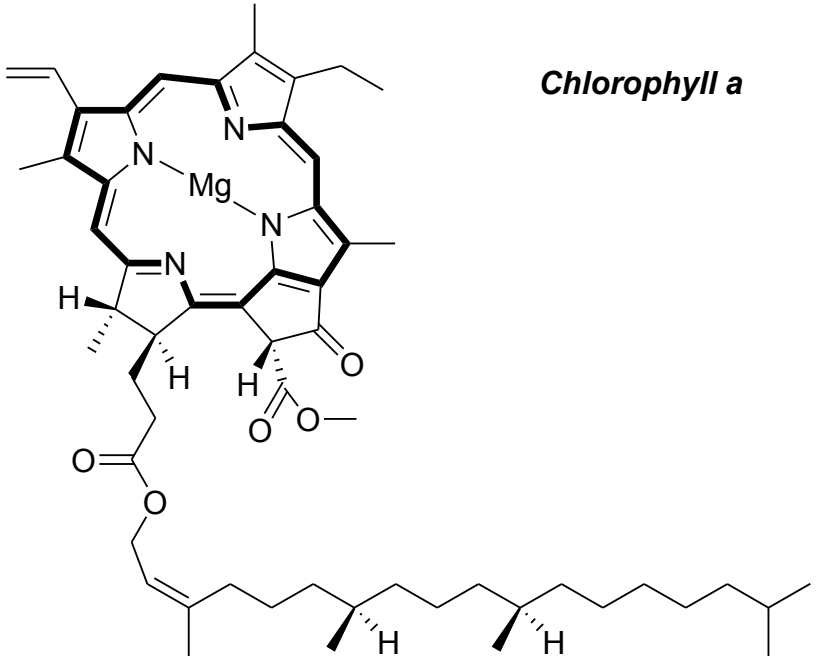
La cuisine : de quoi s'agit il ?

1. La technique

La couleur ? Les couleurs !

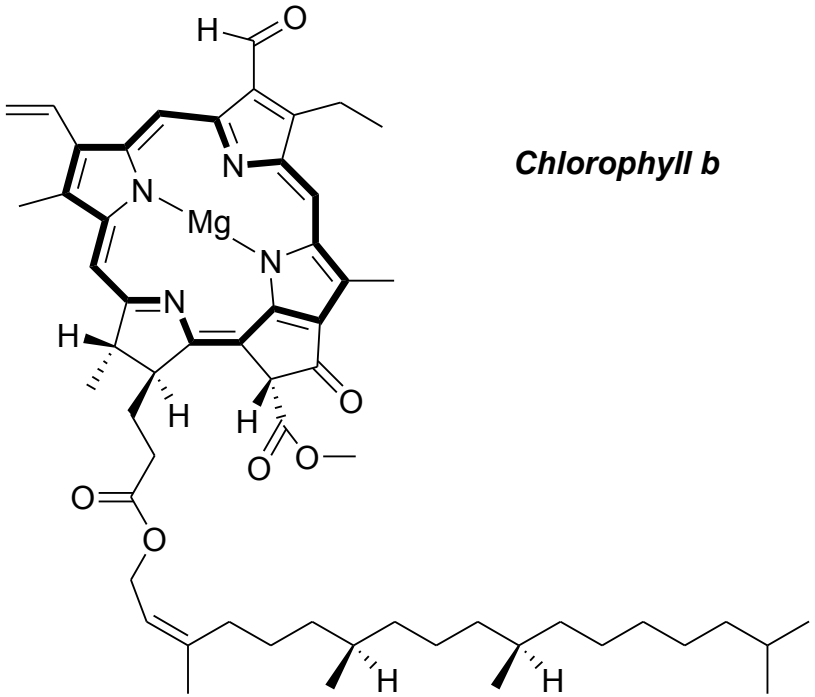


Avec des bases théoriques (« la » chlorophylle n'existe pas!)



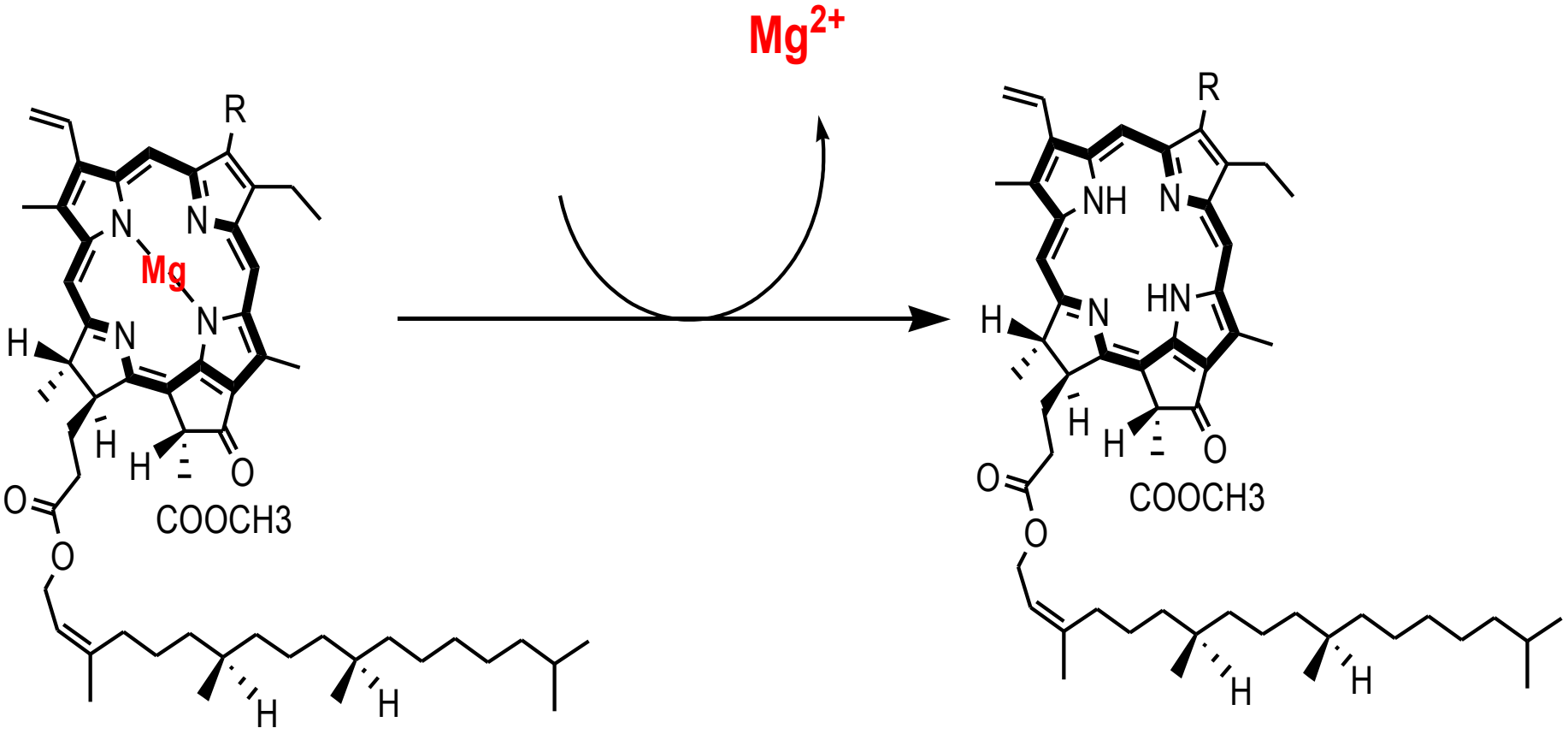
Chlorophyll a

$C_{57}H_{76}MgN_4O_5$
Mol. Wt.: 921,54



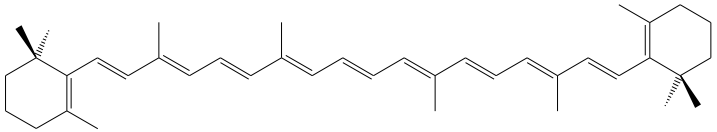
Chlorophyll b

Des théories... fausses, donc

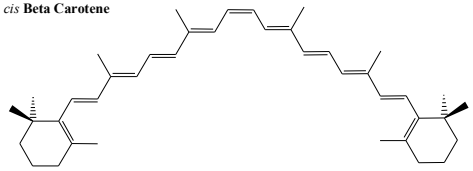


Car il y a notamment d'autres pigments

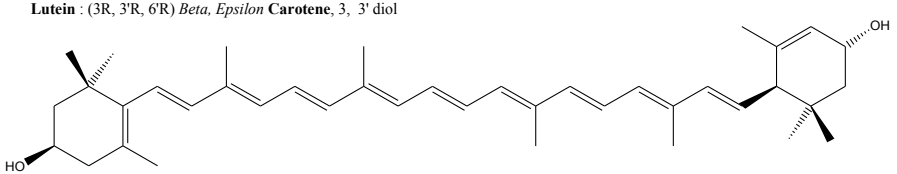
all trans **Beta Carotene**



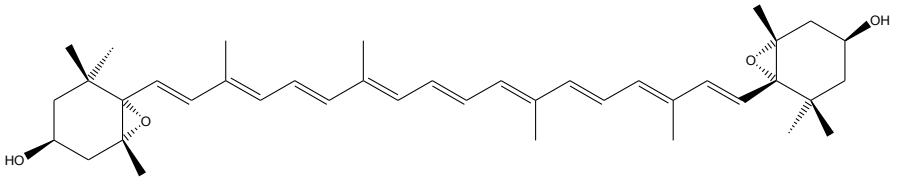
15 - cis **Beta Carotene**



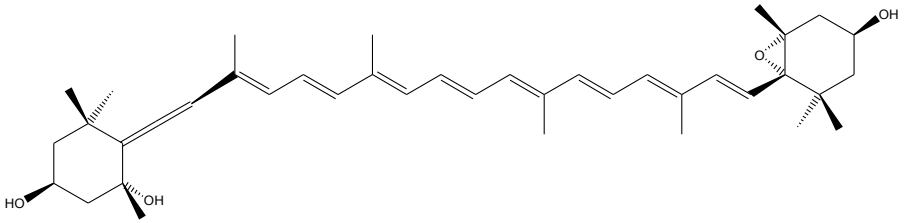
Lutein : (3R, 3'R, 6'R) *Beta, Epsilon* **Carotene**, 3, 3' diol



Violaxanthin : (3S, 5R, 6S, 3'S, 5'R, 6'S) - 5, 6, 5', 6' - Diepoxy - 5, 6,5', 6', tetrahydro - beta, beta **Carotene** - 3, 3' diol.

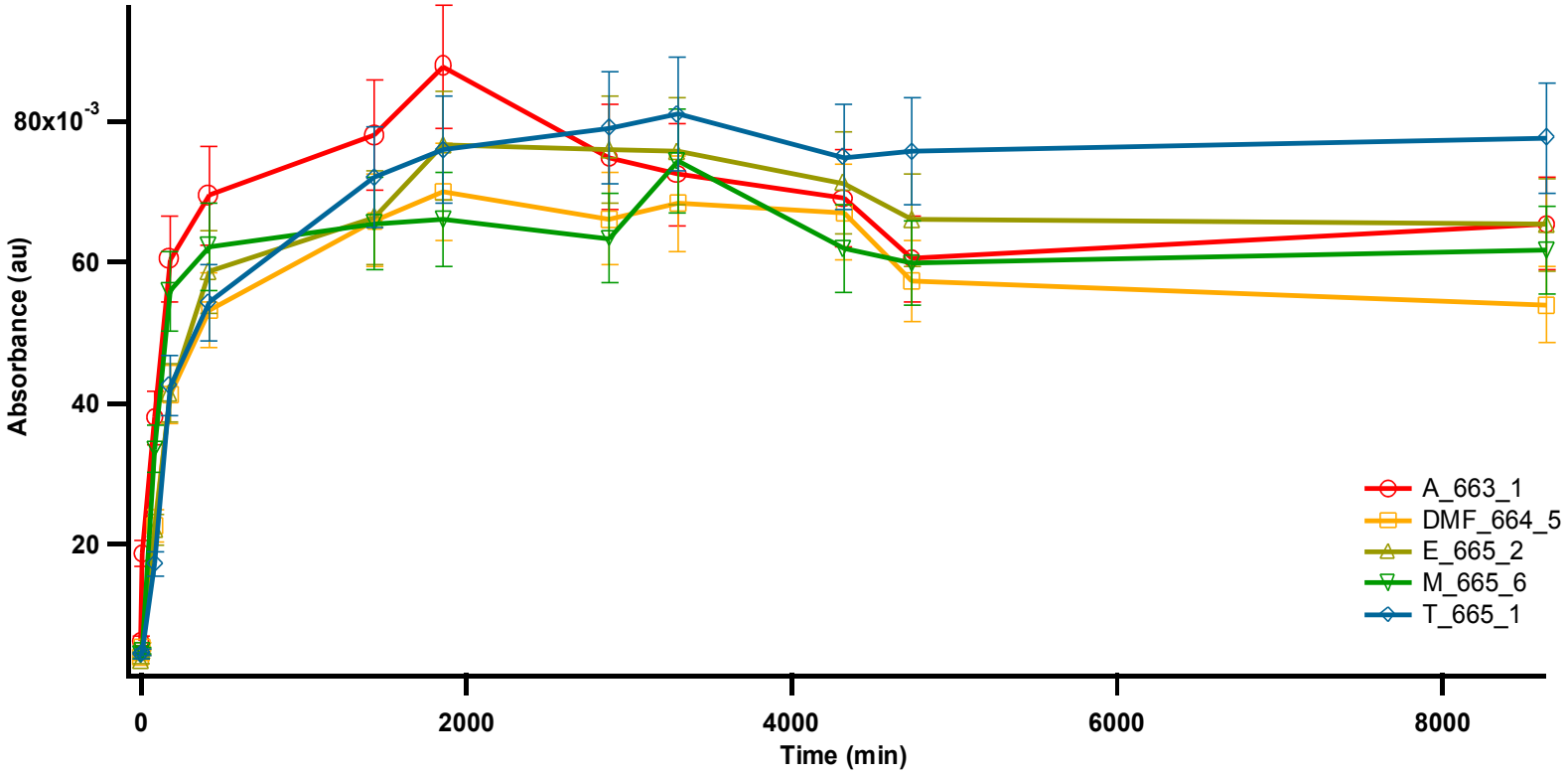


Neoxanthin : (3S, 5R, 6R, 3'S, 5'R, 6'S) - 5', 6' Epoxy - 6,7 didehydro - 5, 6, 5', 6' - tetrahydro - beta, beta **Carotene** - 3, 5, 5 ' - triol

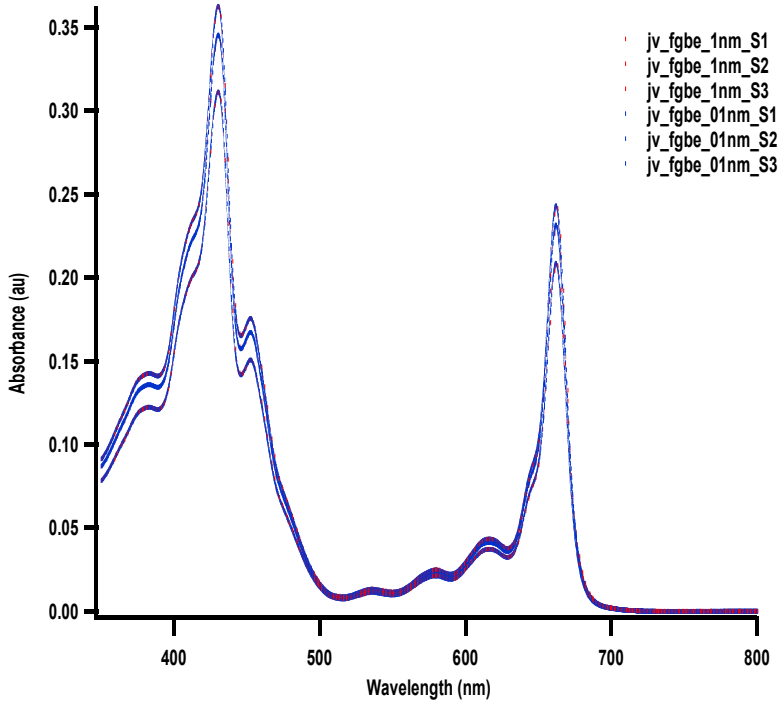


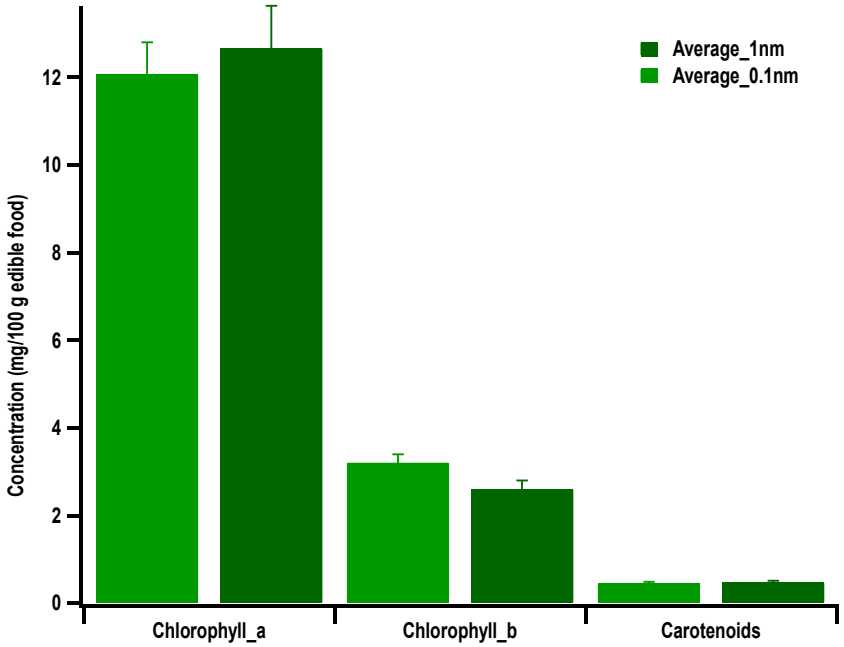
La préparation d'échantillons (extractions)

Des « lois » ...


80x10-3
60
40
20
Absorbance (au)
0
2000
4000
6000
8000
Time (min)
A_663_1
DMF_664_5
E_665_2
M_665_6
T_665_1

Encore des validations



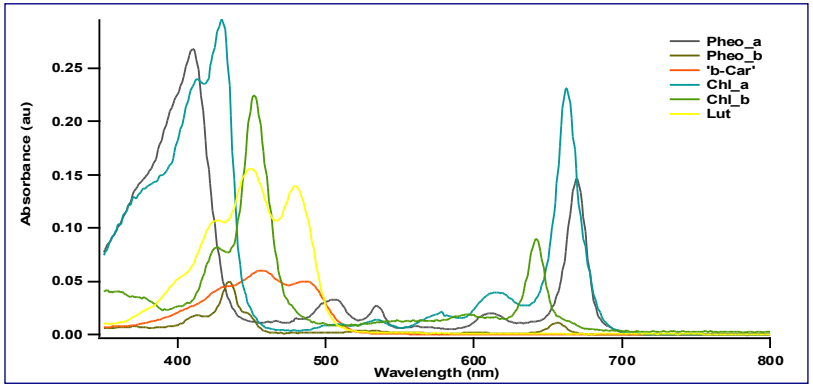


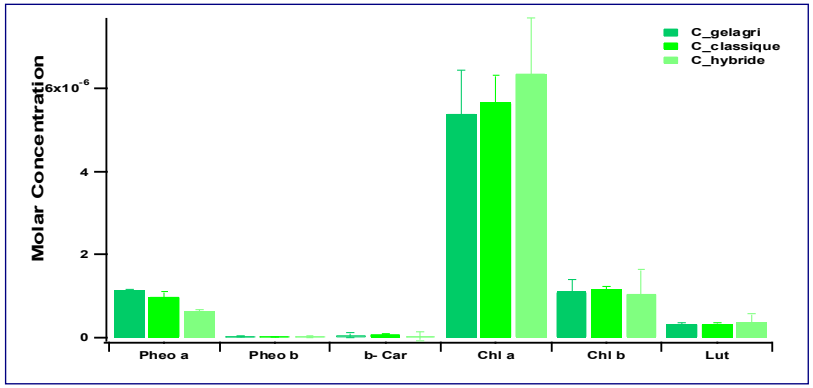
Et des calculs pour s'en tirer...

$$\sum_{i=1}^{451} S_{\exp,i} = \sum_{i=1}^{451} \sum_{n=1}^{6} \alpha_{n,i} S_{n,i}(\lambda_i)$$

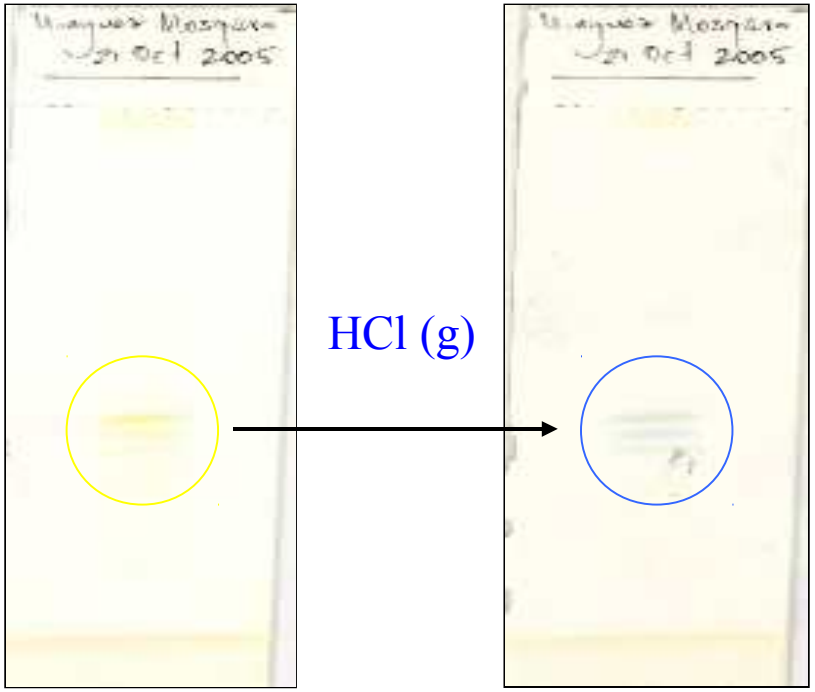
$$R^2 \equiv \sum_{i=1}^{451} \left(S_{\exp}(\lambda_i) - \sum_{n=1}^{6} \alpha_n S_n(\lambda_i) \right)^2$$

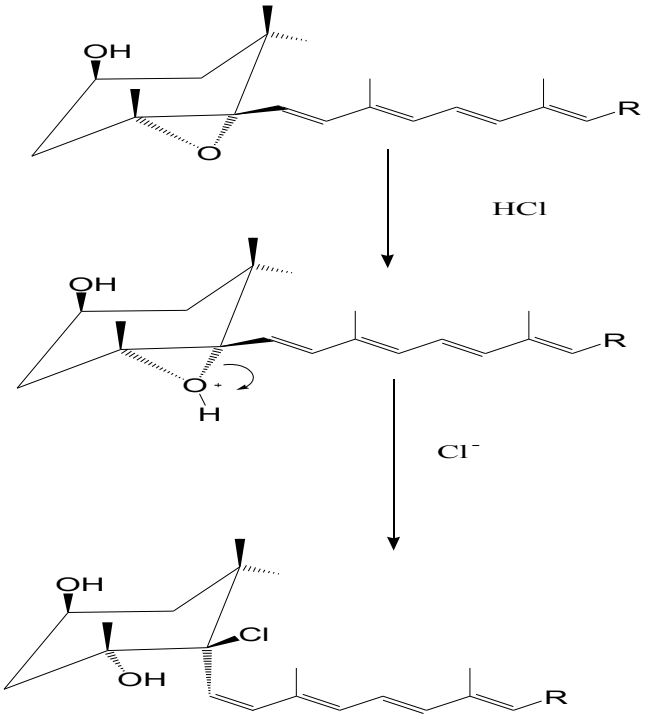
$$\frac{\partial R^2}{\partial \alpha_n} = 0 \rightarrow \forall n .$$





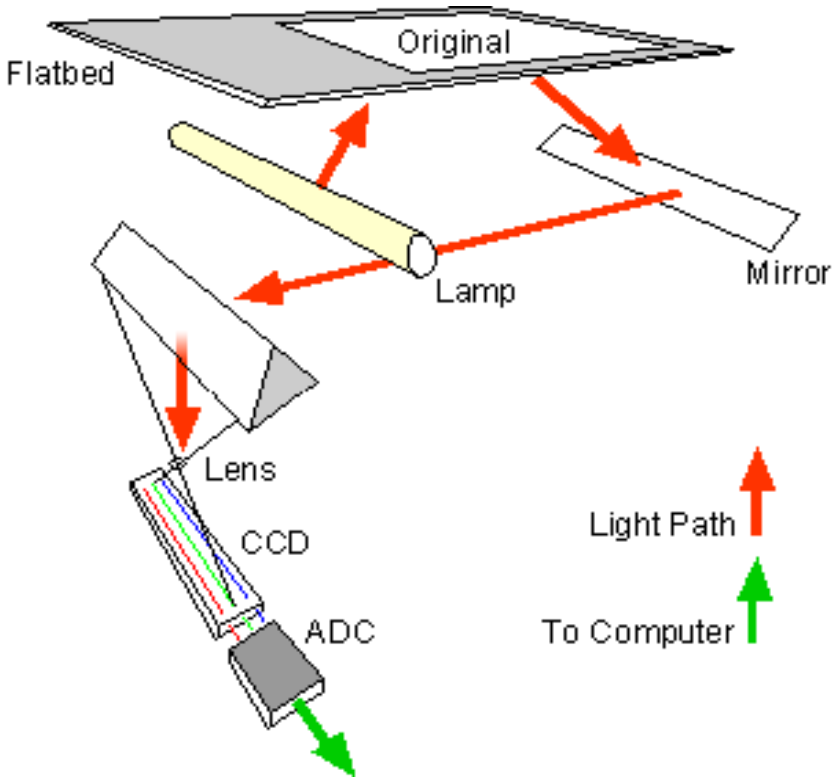
Des validations robustes

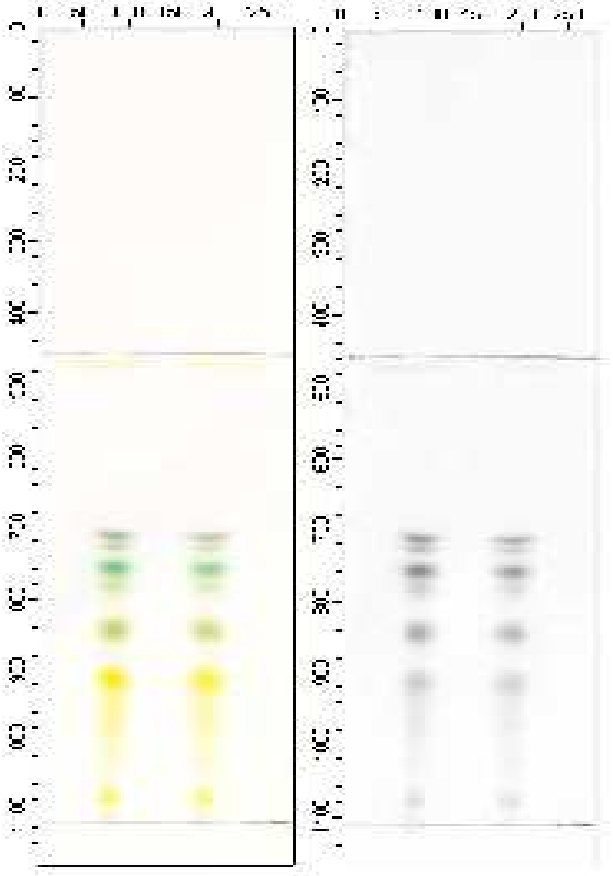




Minguez-Mosquera, M. I.; Garrido-Fernandez, J. *J Agric Food Chem* **1989**, *37*, 1-7.
Razungles, A. J.; Babic, I.; Sapis, J. C.; Bayonove, C. L. *J Agric Food Chem* **1996**, *44*, 3821-3825.

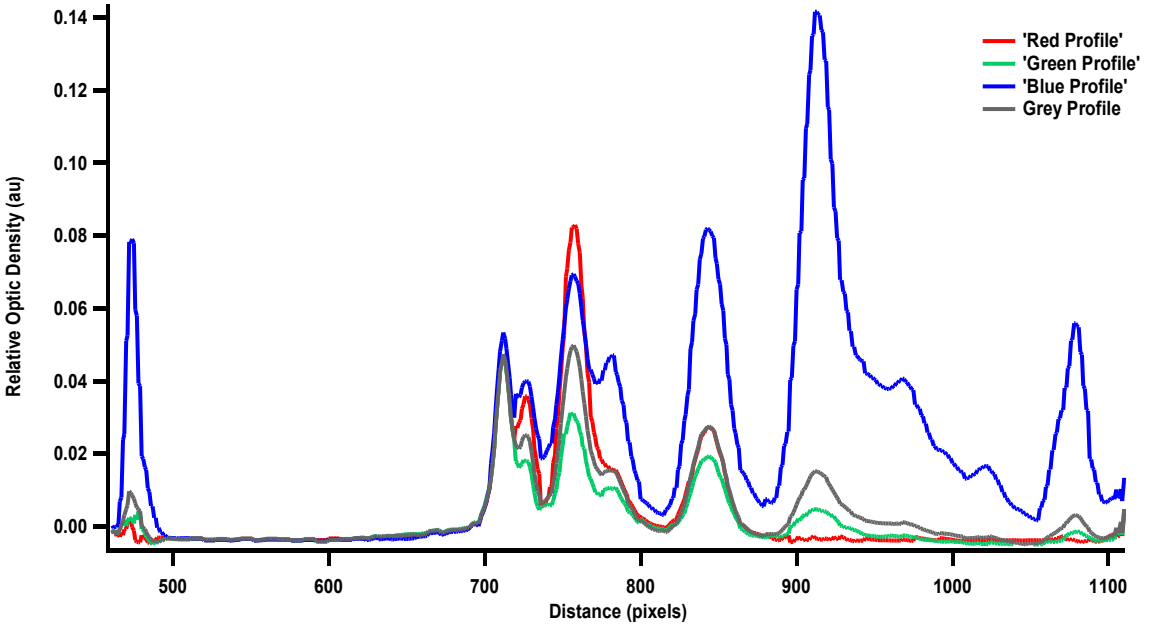
Toujours quantitatives!

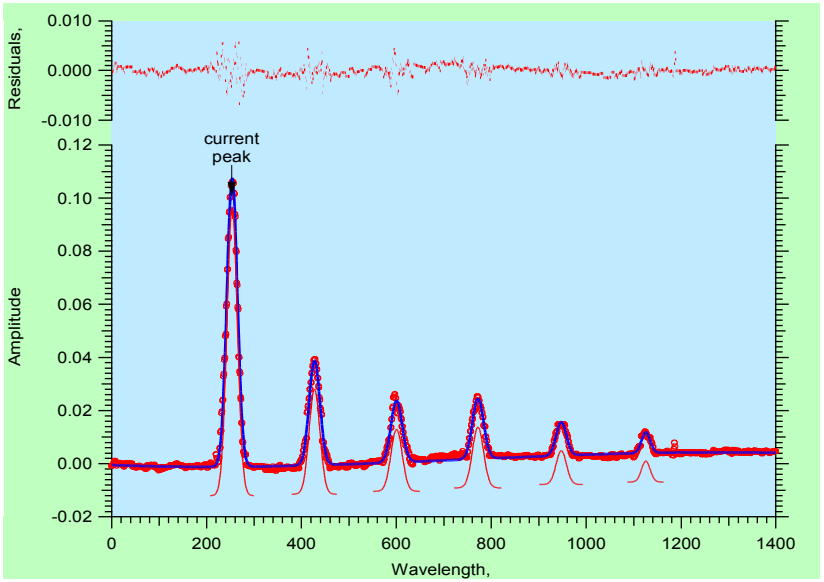


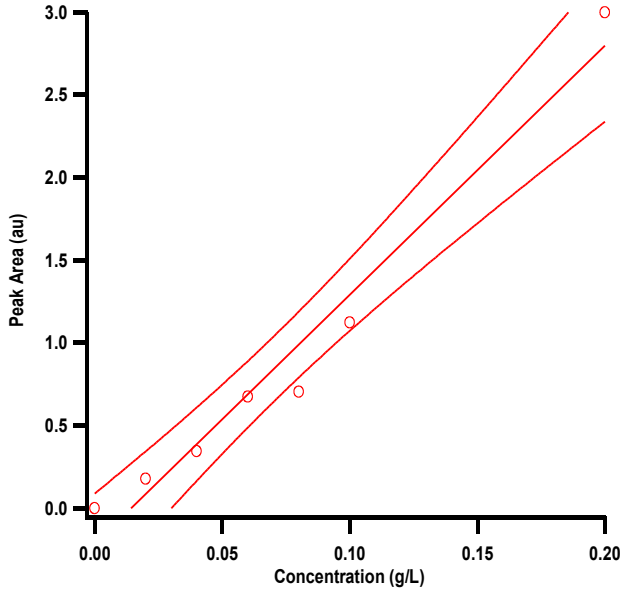


$$Opacity = \left(\frac{incident\_light}{reflected\_light} \right)$$

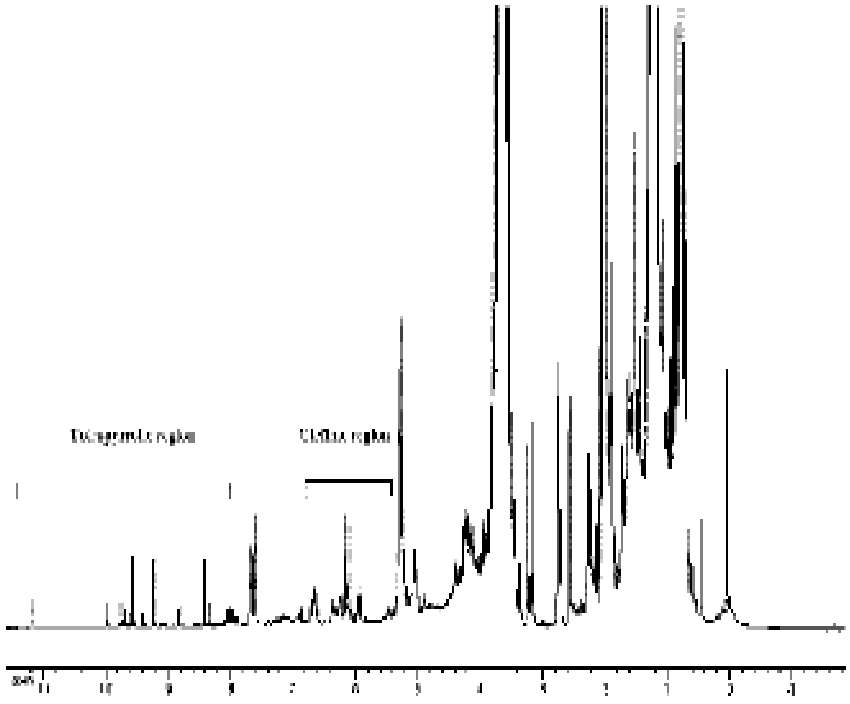
$$ROD = \log(Opacity)$$

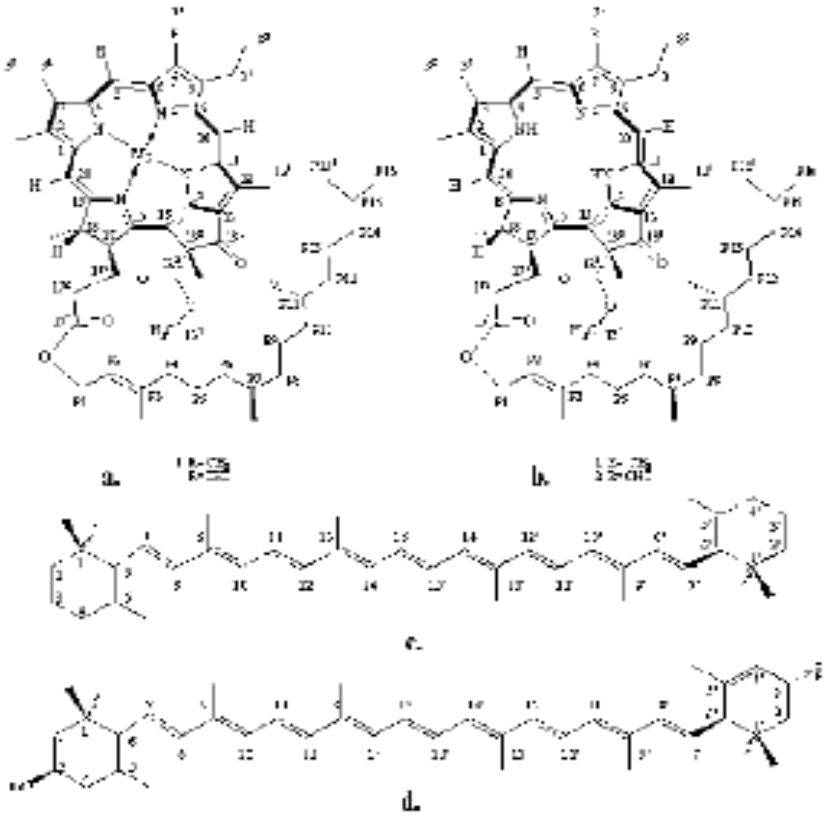






C'est quand même bien mieux !



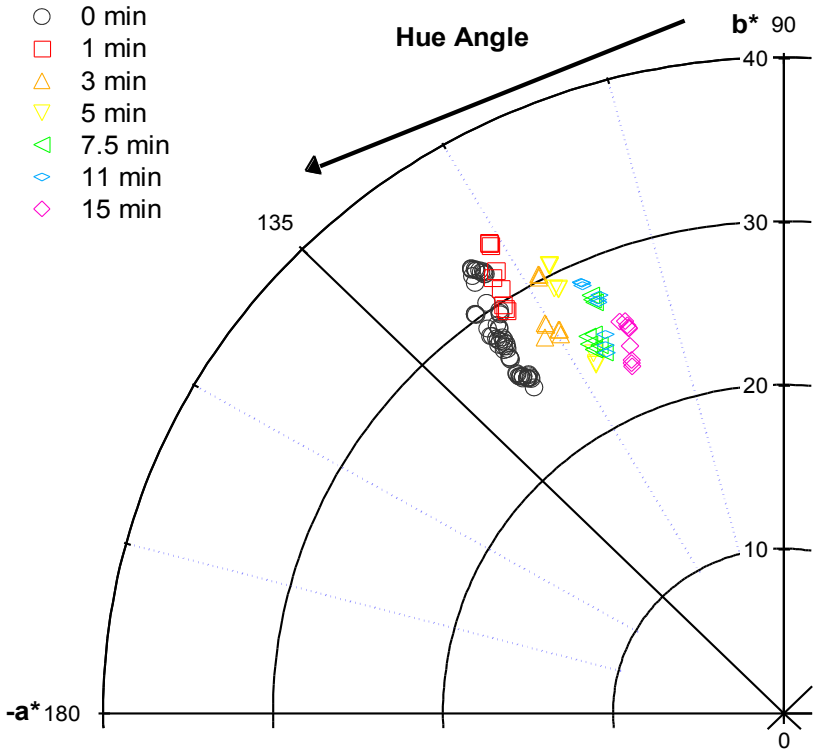


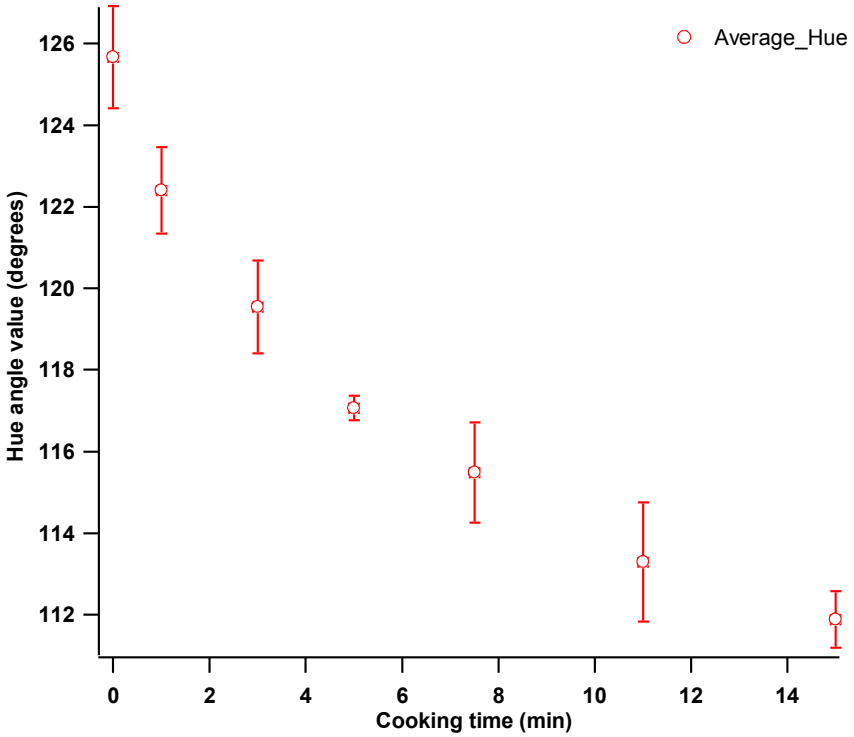
Valverde, J.; This, H., 1H NMR Quantitative Determination of Photosynthetic Pigments from Green Beans (Phaseolus vulgaris L.). *J. Agric. Food Chem.* **2008,** 56, (2), 314-320.

Ce qui permet de revenir aux questions :

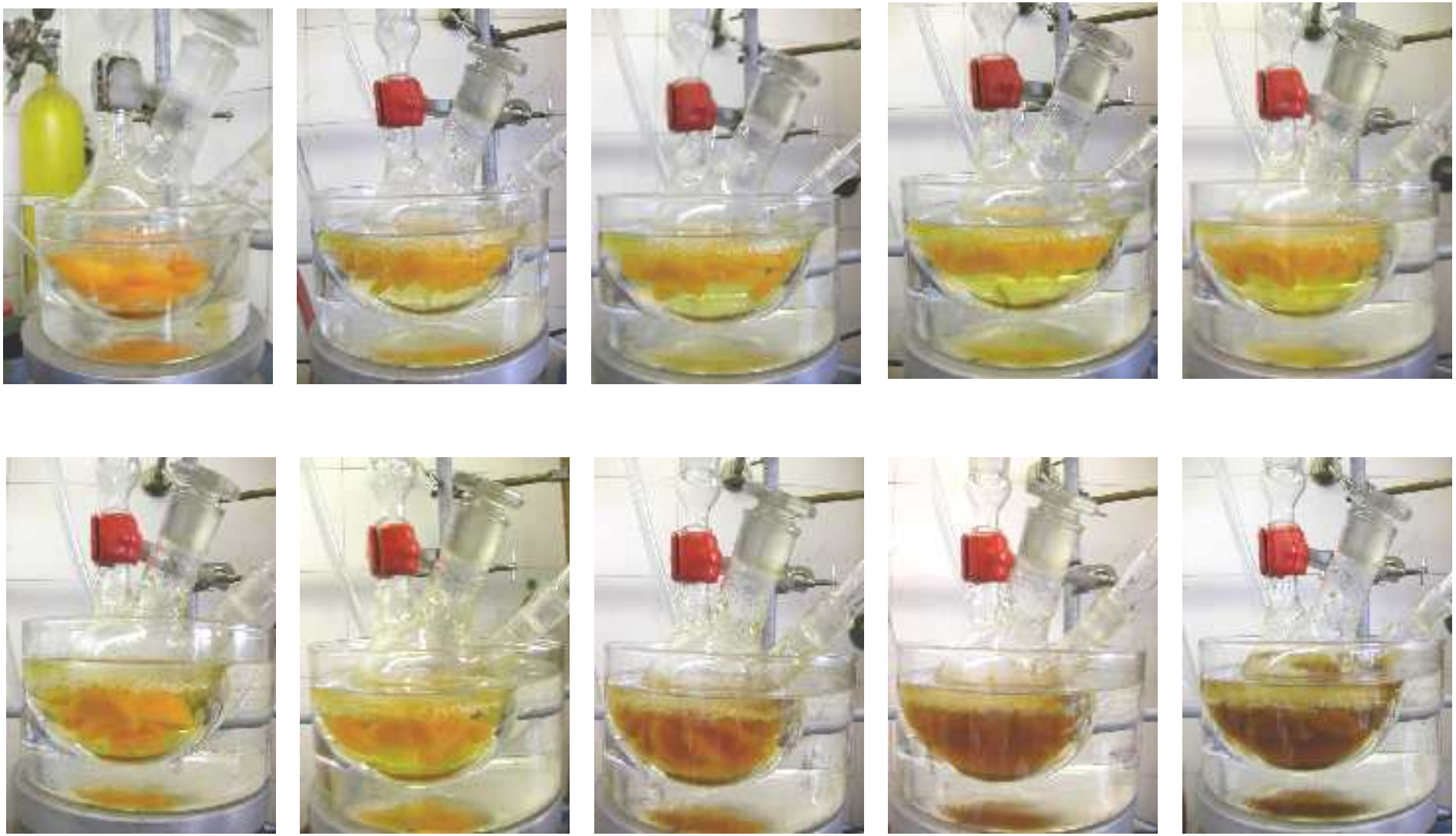
- blanchissement
- température
- durée
- refroidissement
- ajout de sel
- acidité
- cuisson par micro-ondes
- très hautes pressions

Par exemple, la durée de cuisson

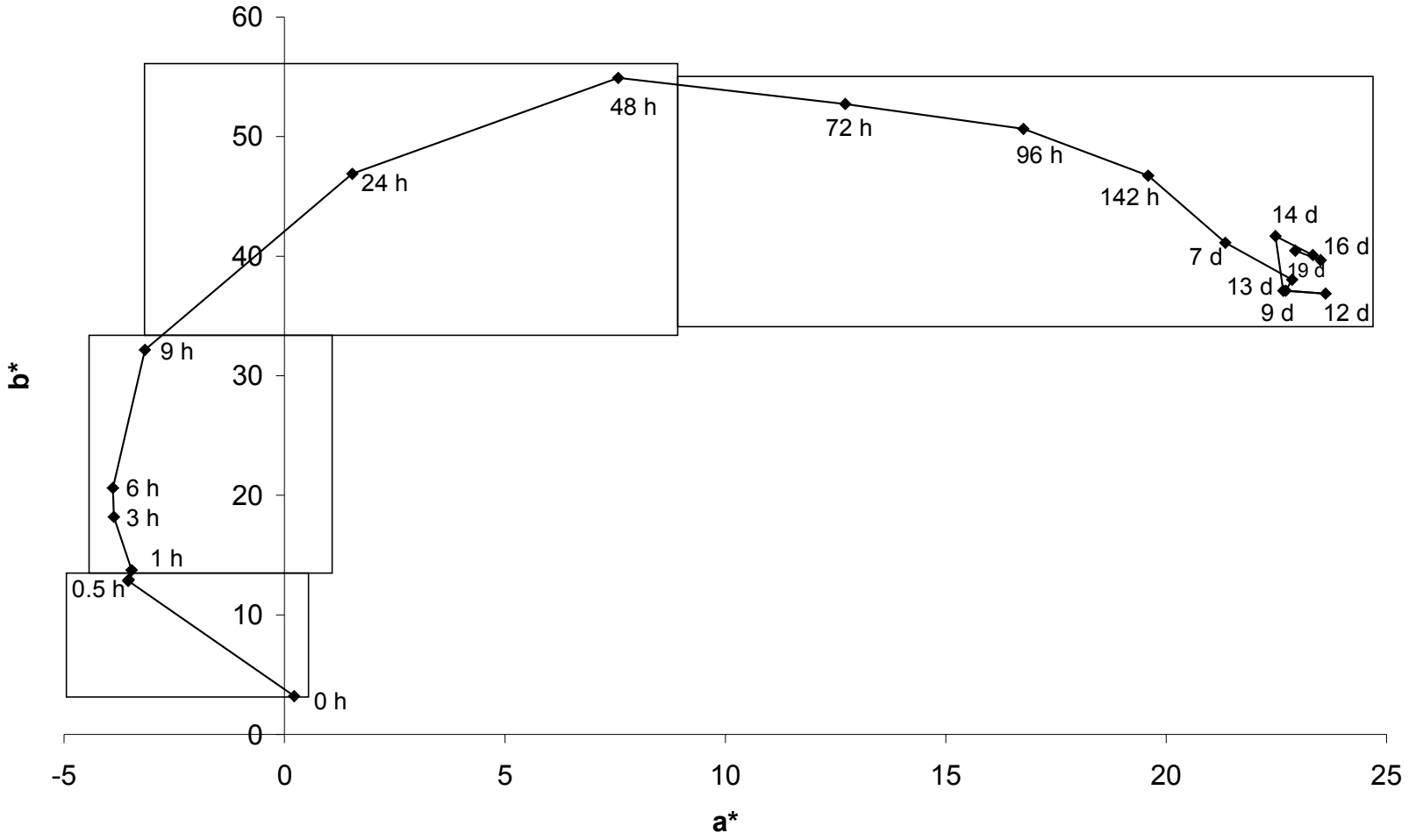




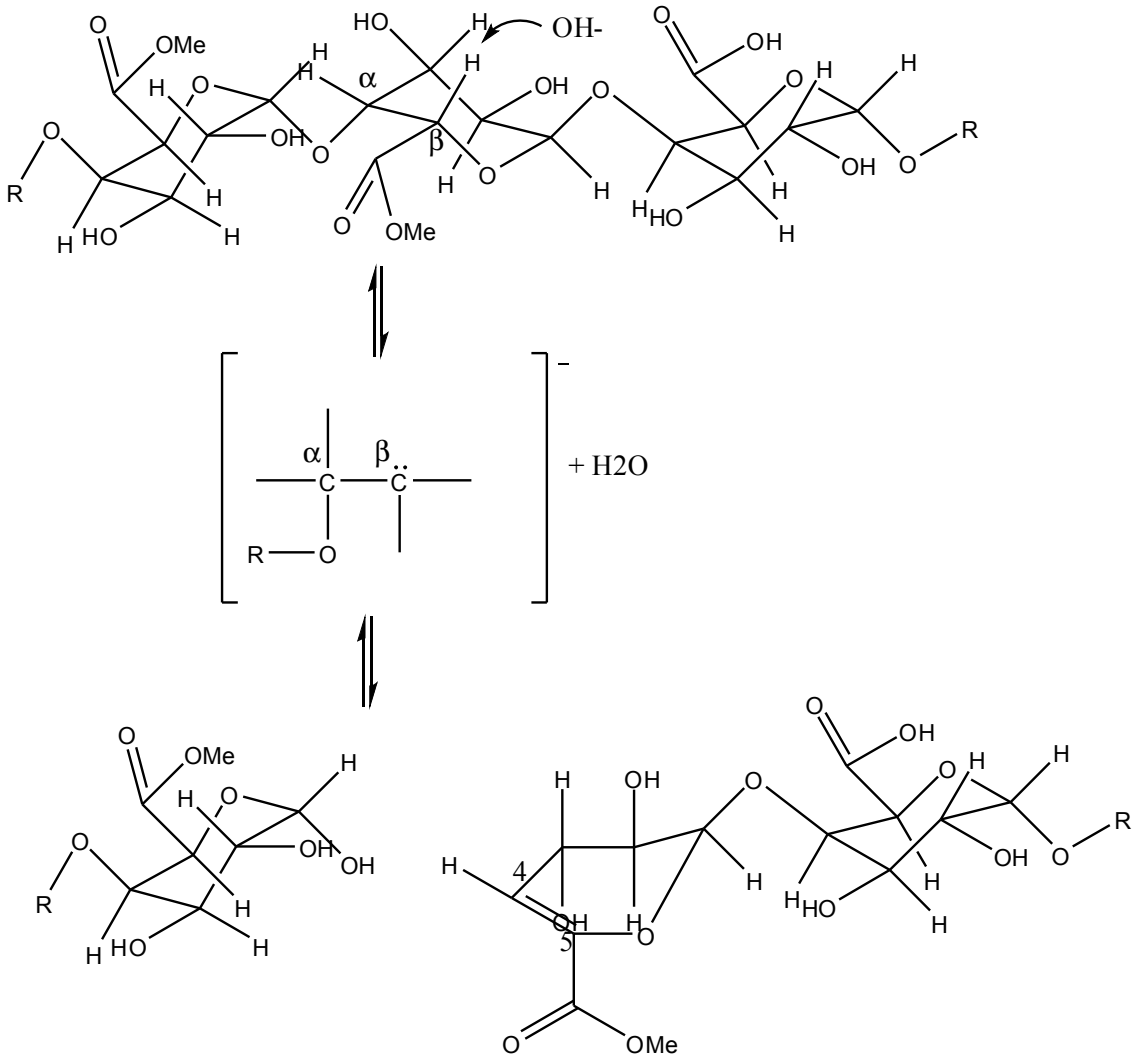
Serendipité



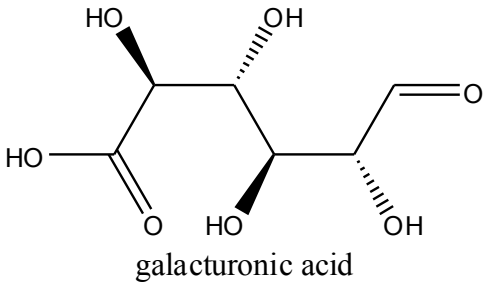
Une évolution fréquente



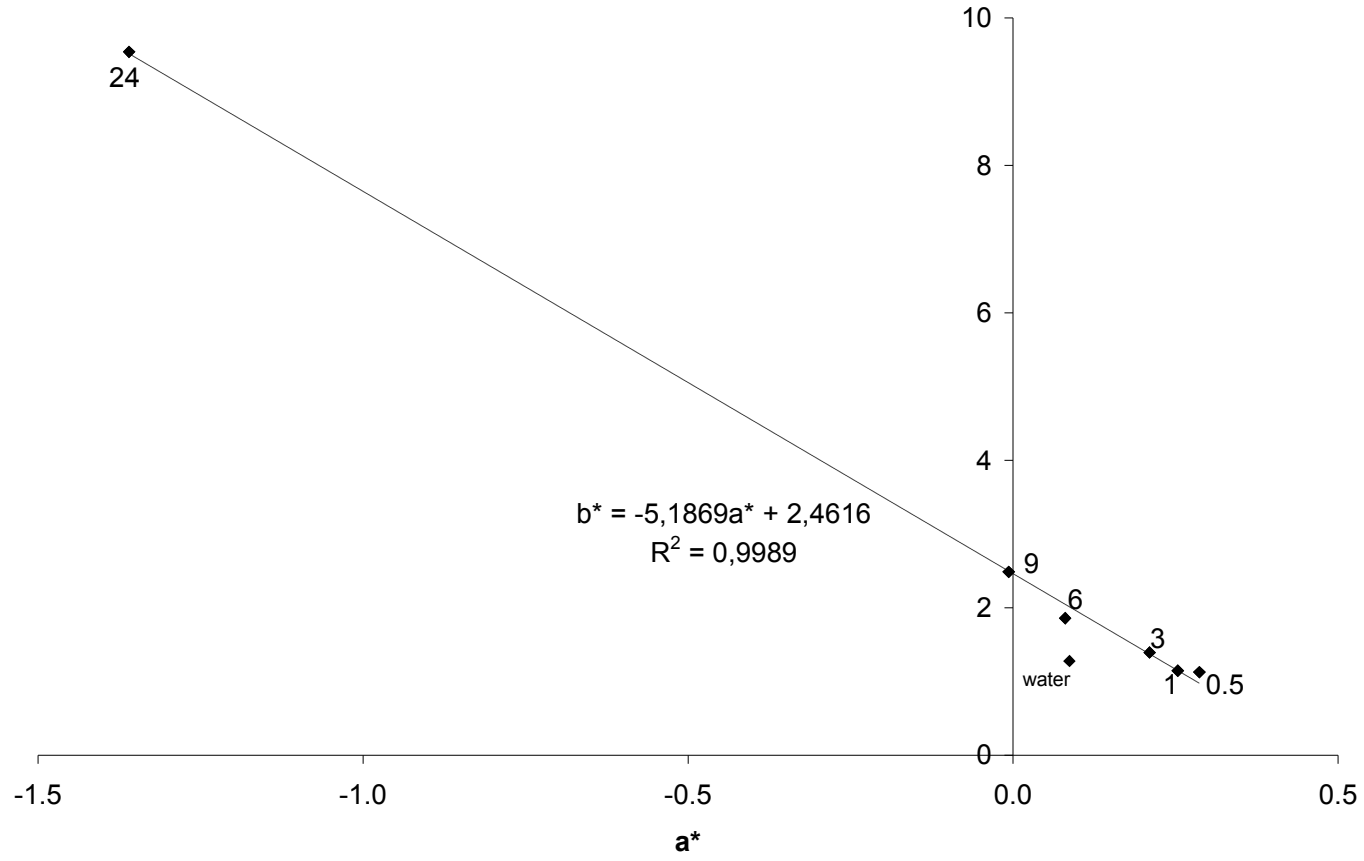
La bêta élimination des pectines



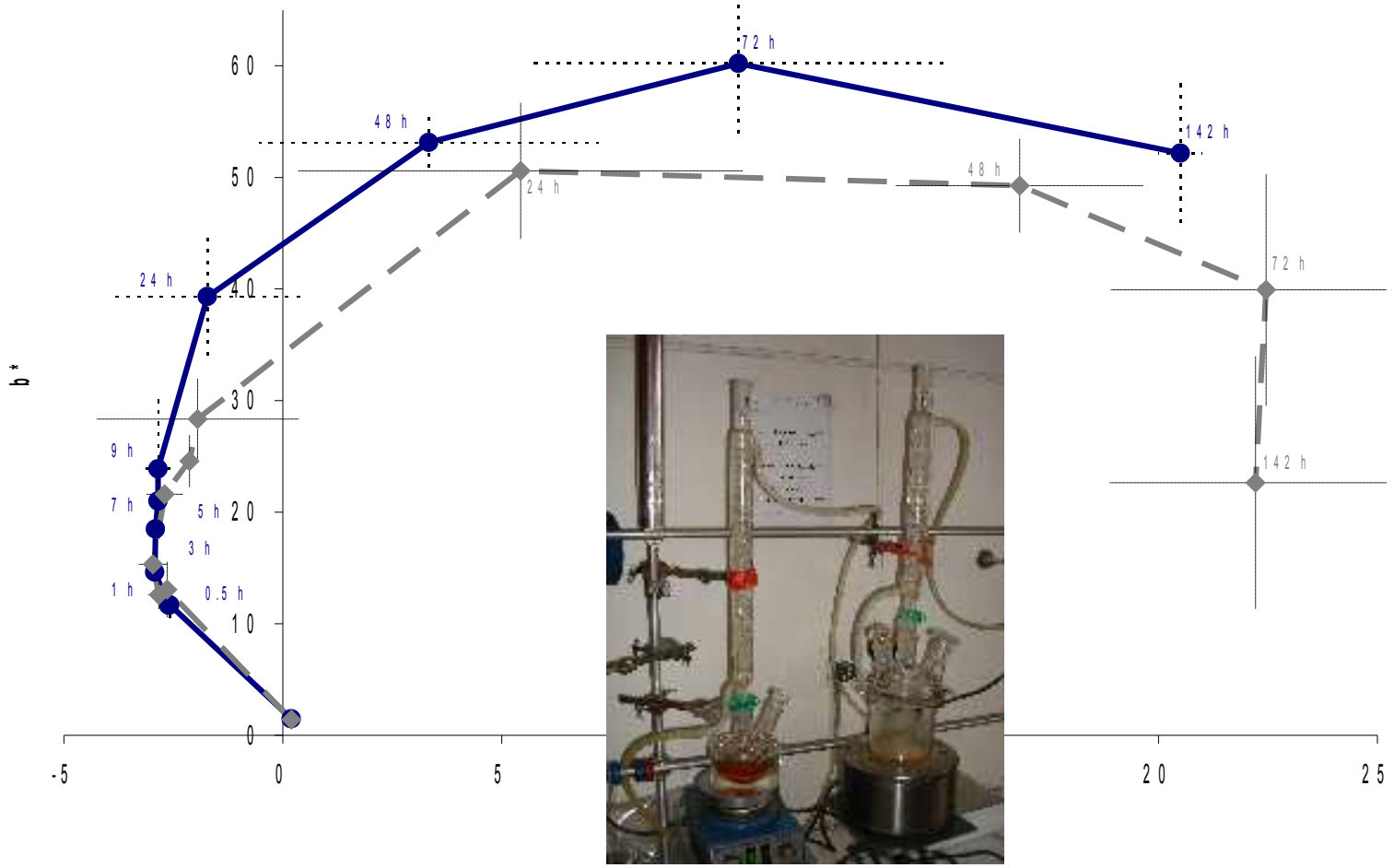
Avec un seul composé



galacturonic acid



L'effet de la lumière



$$C(t) = k \,.\, m(t) \,.\, c$$

$$C(t) = C1(t) + C2(t)$$

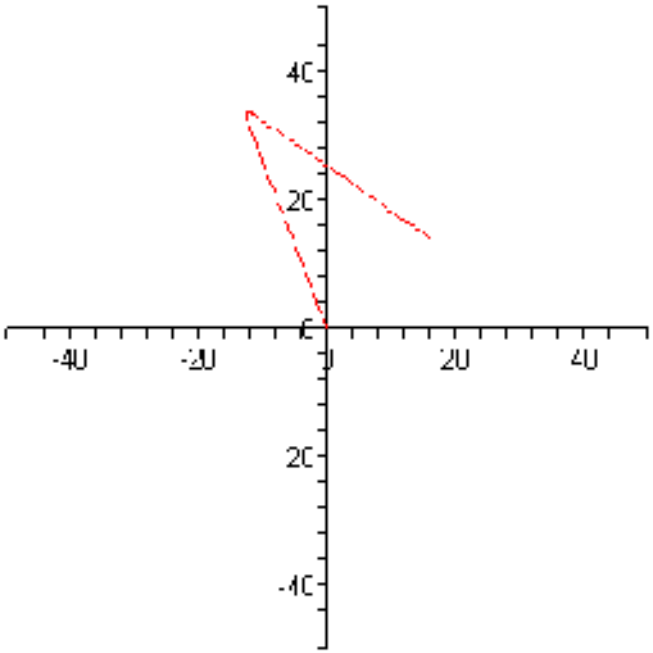
$$\frac{dm_1(t)}{dt} = e^{-t} - \frac{dm_2(t)}{dt} \qquad \frac{dm_2(t)}{dt} = \alpha m_1(t)$$

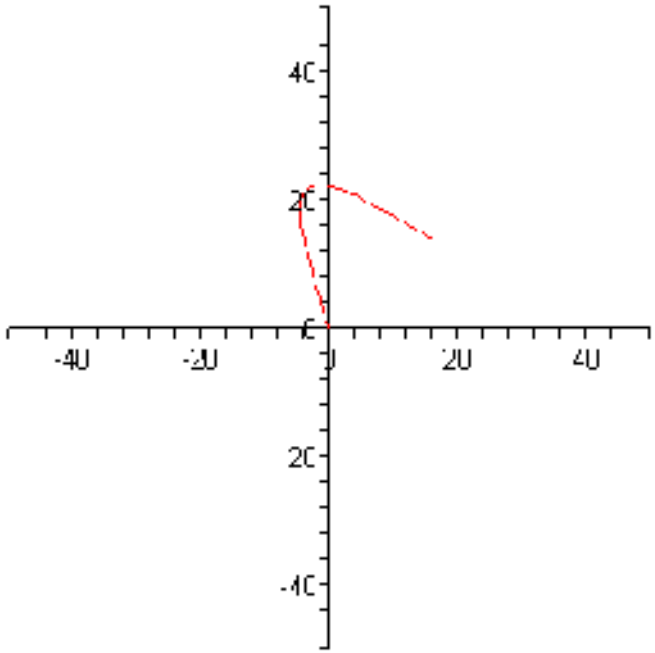
$$m_1(t) = \frac{(-a_1 + \alpha a_1)\, e^{-\alpha t}}{-1+\alpha} + \frac{e^{-t}}{-1+\alpha}$$

$m1(0) = 0$, i.e. $a1 = -1/(-1+\alpha)$.

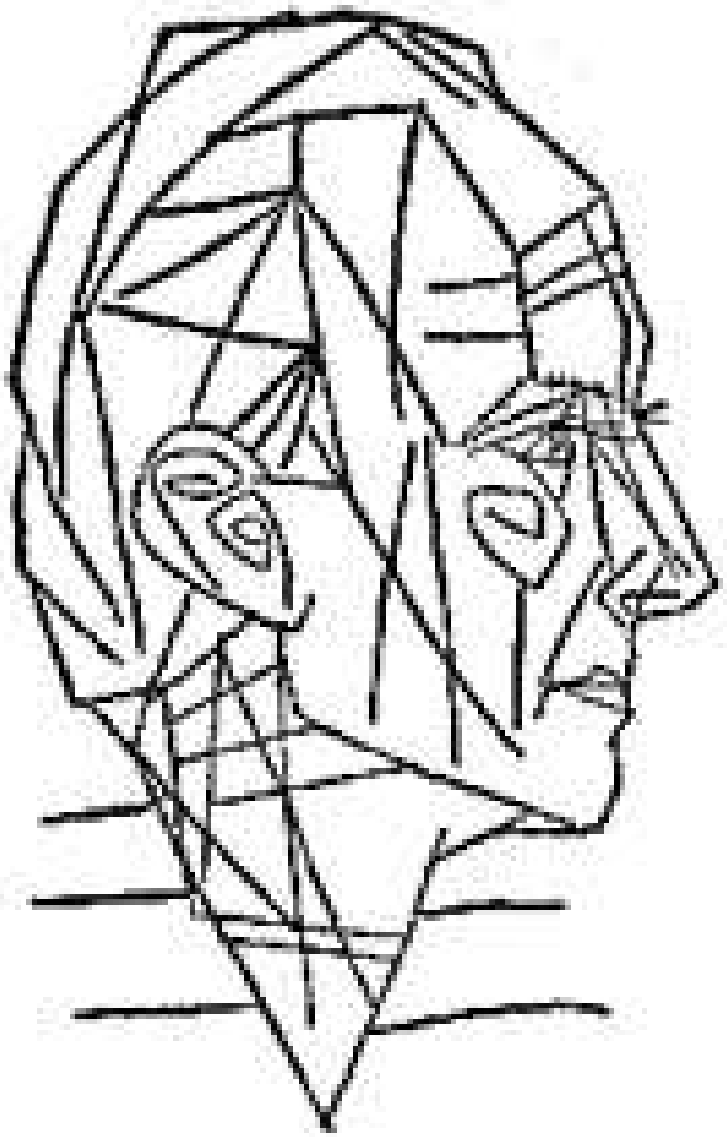
$$m_2(t) = -\frac{\alpha e^{-t} - a_1 e^{-\alpha t} + \alpha a_1 e^{-\alpha t} + a_2 - \alpha a_2}{-1+\alpha}$$

Des courbes théoriques évidentes

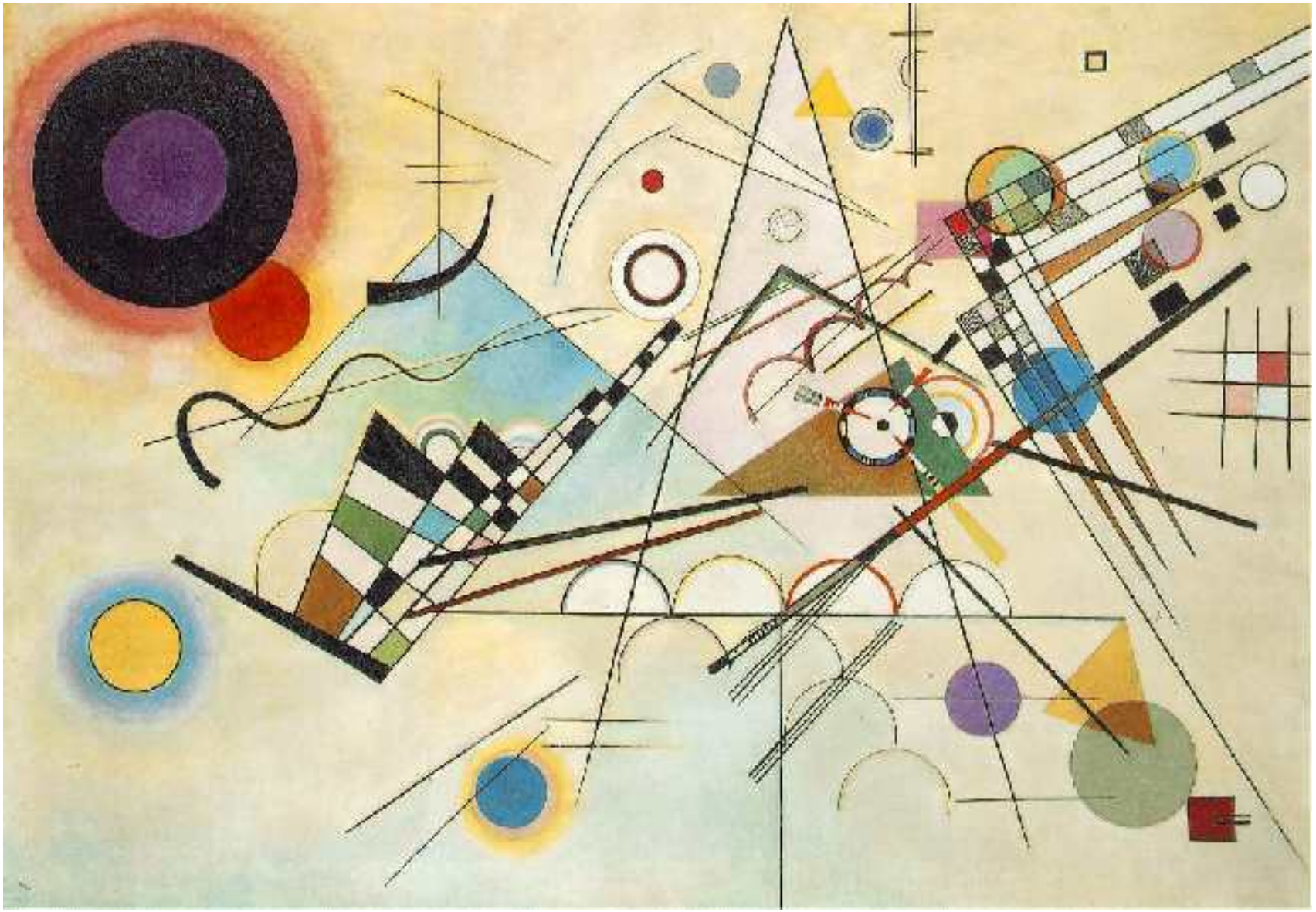




2. L'art



Un exemple culinaire

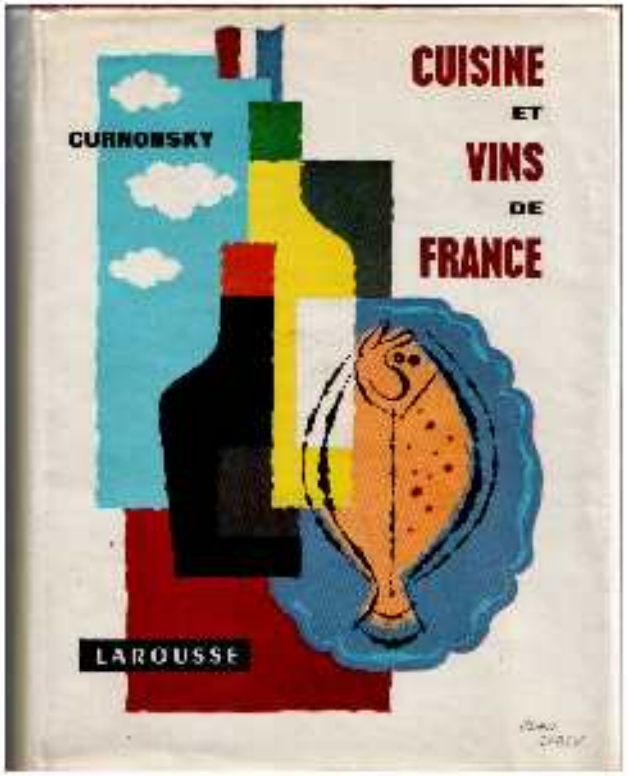


Abstrait N°1

L'Art culinaire ?
En cuisine, le « bon» c'est le « beau à manger »

(pas le beau à entendre ou à voir)

C'était « beau » en 1953 !




25 16:58

La « couleur » existe-t-elle indépendamment des autres modalités visuelles ?

Non !

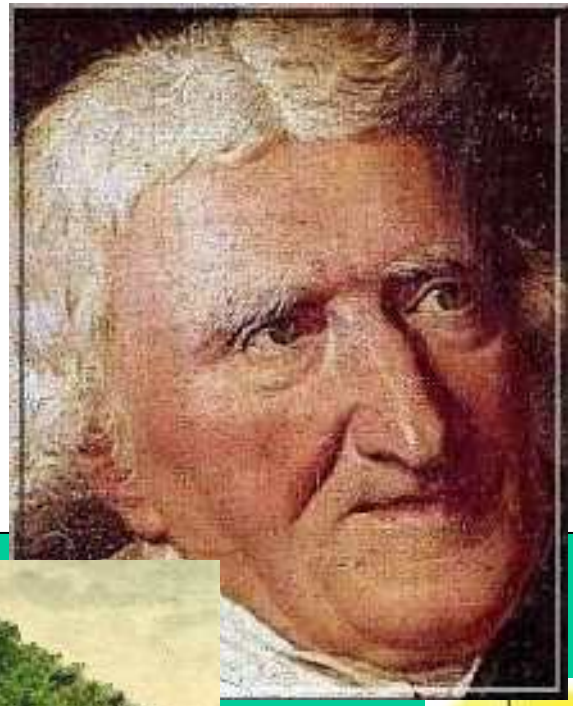
Une hypothèse :
le « constructivisme culinaire »

Pourquoi le soin est-il important ?

Pour mille raisons

D'où le « constructivisme culinaire »

3. Le lien social
(sommes-nous « libres » de manger ?)



0

20

Demain, cette « cuisine » sera-t-elle « belle » ?

UNESCO, January 26, 2011

Vive la gourmandise éclairée !

herve.this@paris.inra.fr