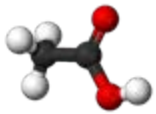
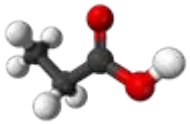
Gilles FERON & Elisabeth GUICHARD

LIPIDES , LIBÉRATION ET PERCEPTION DES AROMES

ALIMENTATION
AGRICULTURE
ENVIRONNEMENT

Les arômes « gras »


Ac. acétique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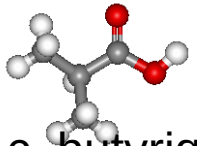
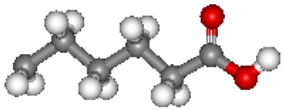

Ac. butyrique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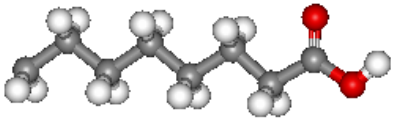
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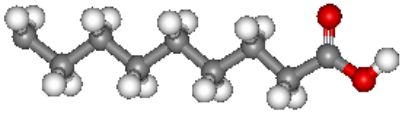
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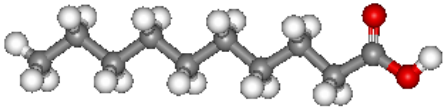
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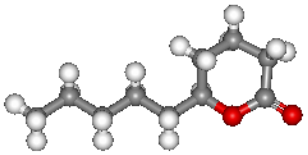
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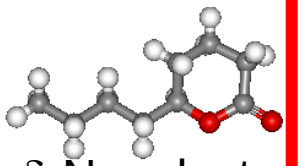
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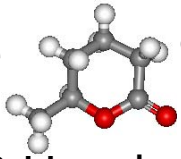
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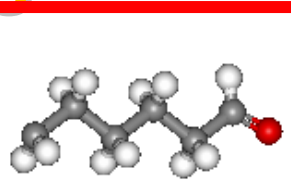
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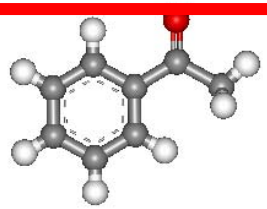
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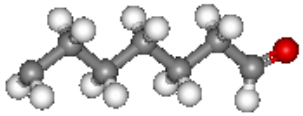
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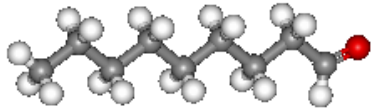
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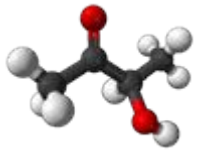
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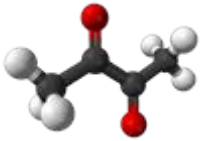
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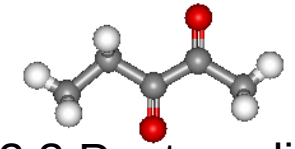
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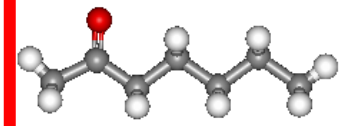
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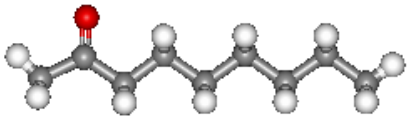
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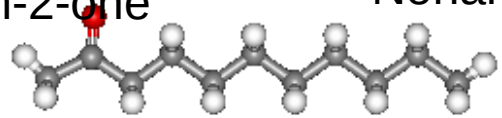
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ALIMENTATION
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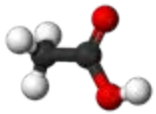
Les arômes « gras »: LogP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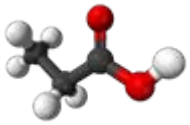
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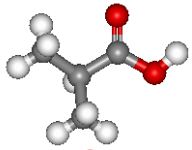
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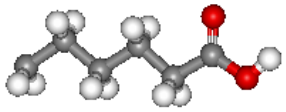
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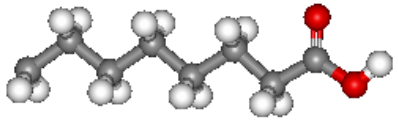
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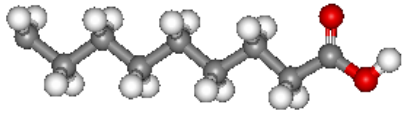
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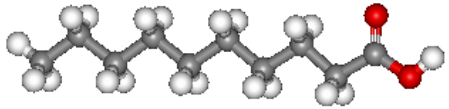
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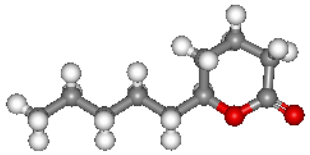
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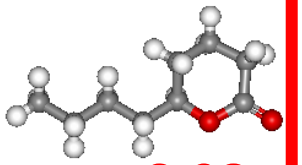
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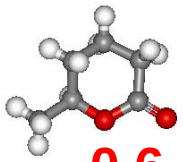
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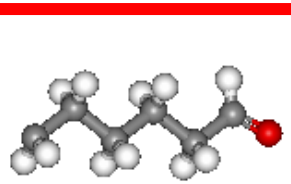
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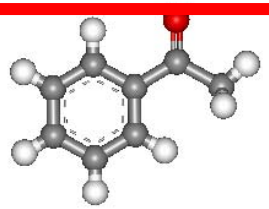
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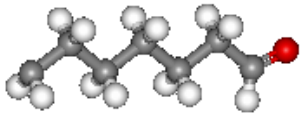
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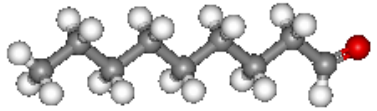
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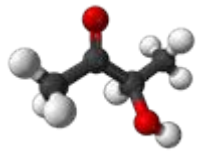
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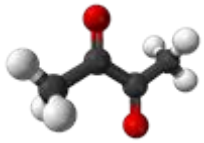
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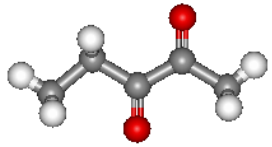
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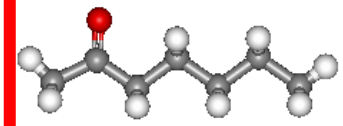
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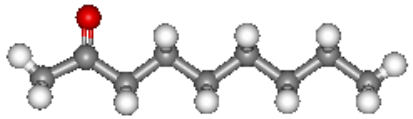
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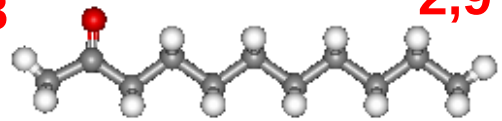
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ALIMENTATION
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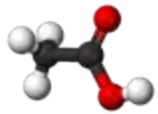
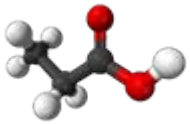
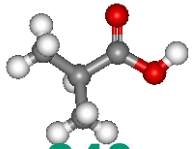
Les arômes « gras »: seuils de perception

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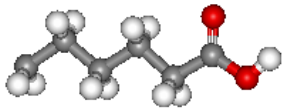
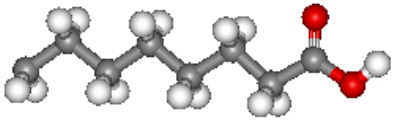

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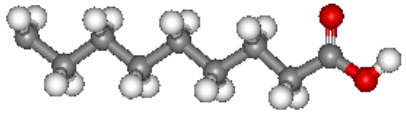
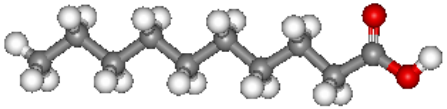

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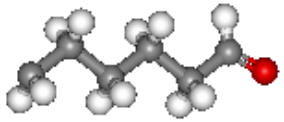
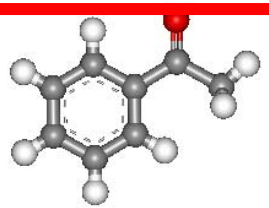

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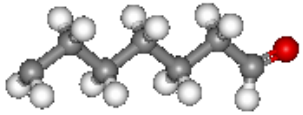
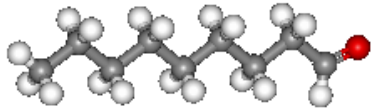

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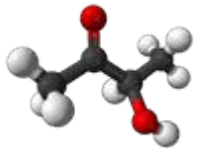
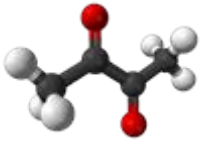
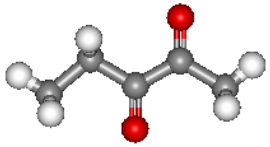

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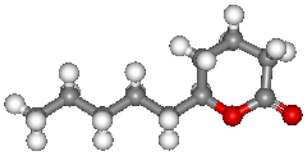
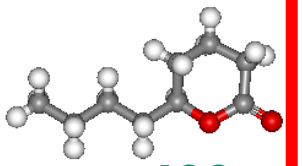
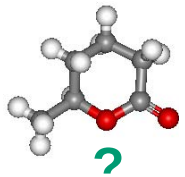

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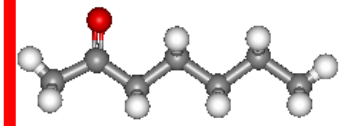
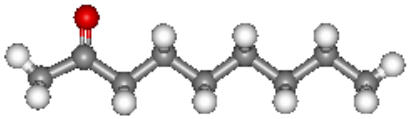
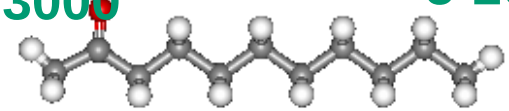




140-3000 5-200 7

LE GRAS: SOLVANT DES ARÔMES

EFFET SUR LA LIBÉRATION

Libération *in vitro* Exemple sur crèmes glacées

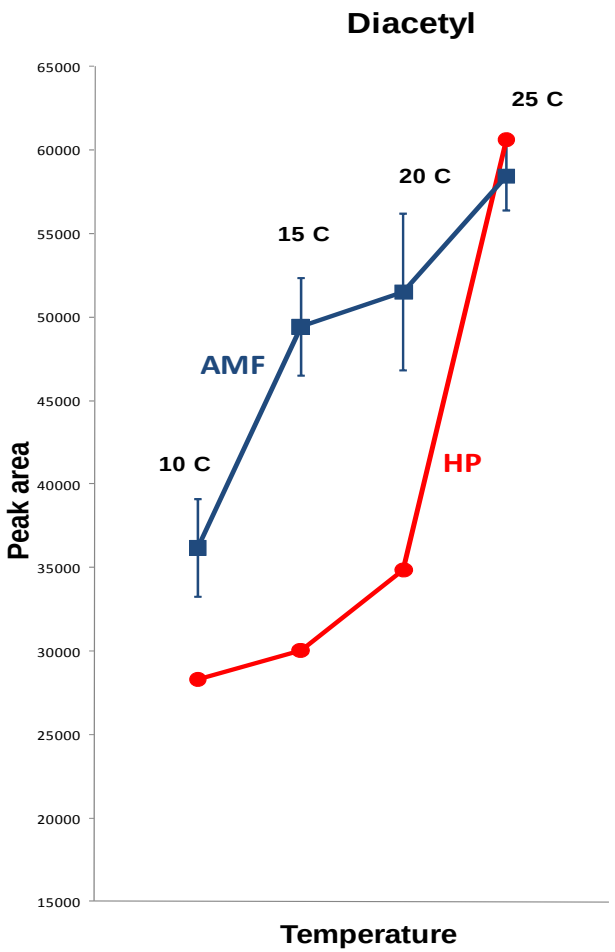
Guichard *et al*, 2008

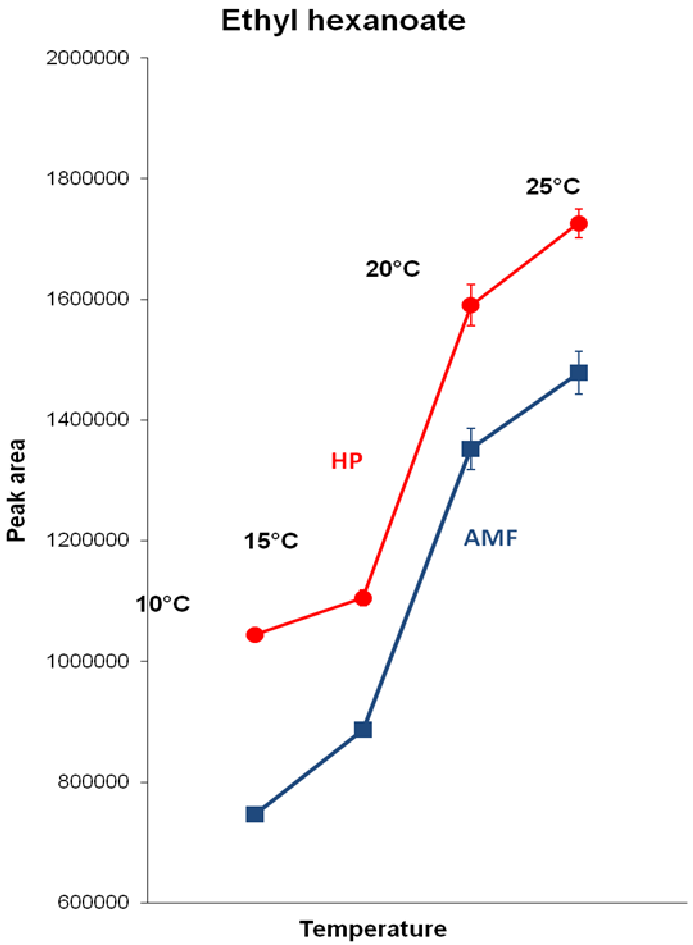
Hexanoate d'éthyle: LogP=2,80

Diacétyle: LogP=-2,29

MG Végétale: HP

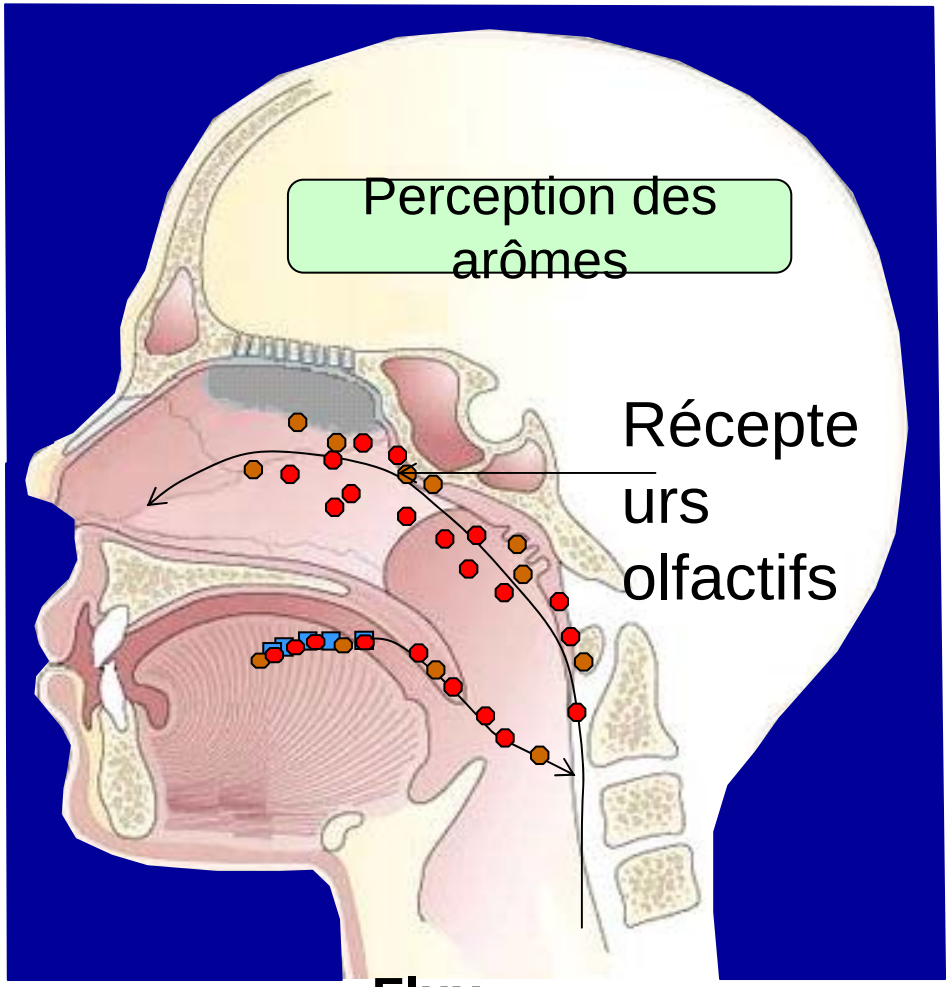
MG Animale: AMF

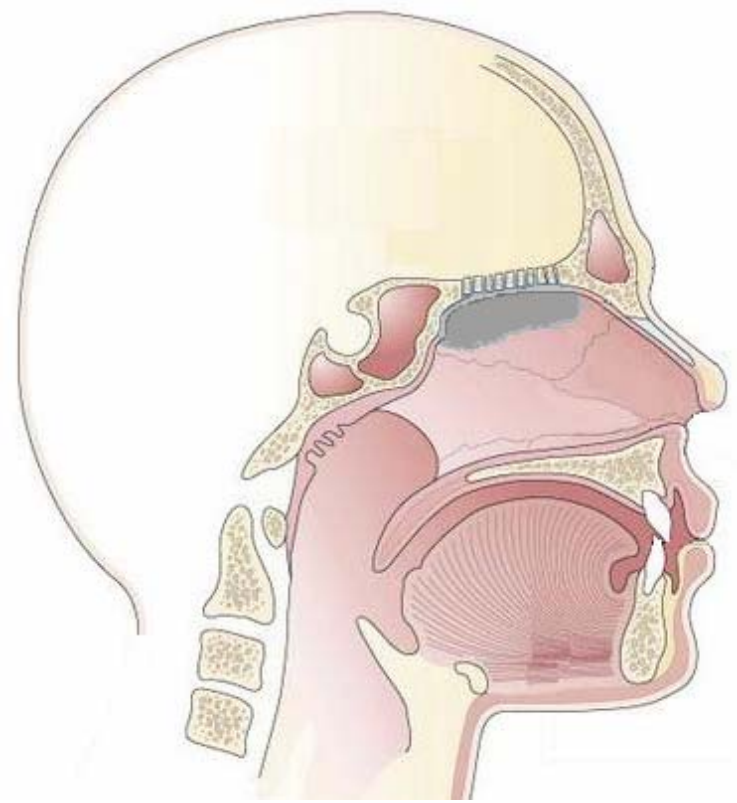


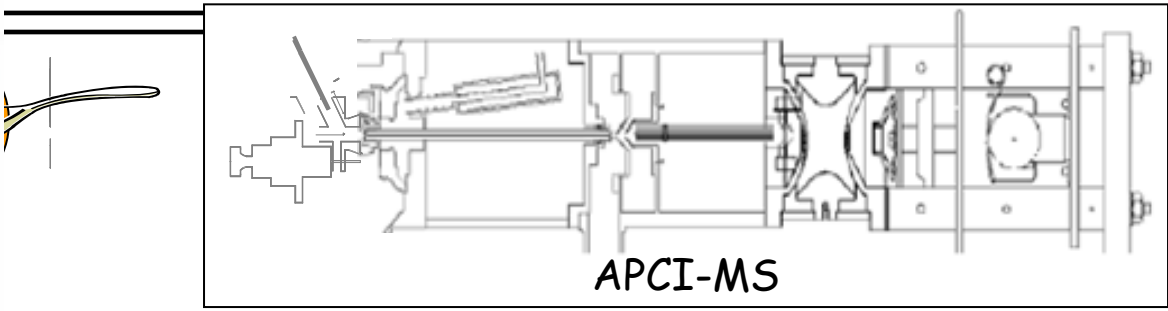


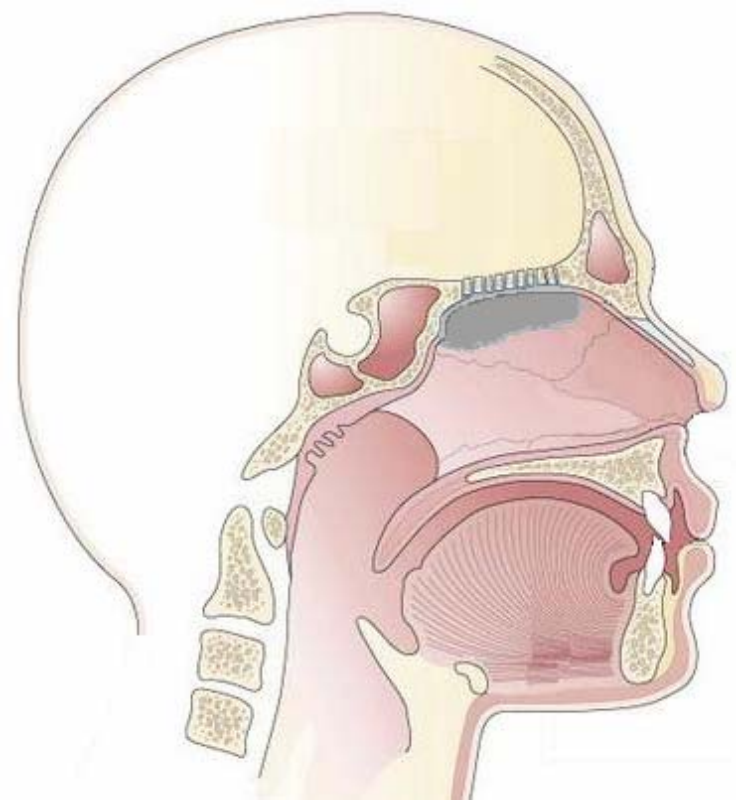
vivo ou le nose-space
Exemple sur le fromage

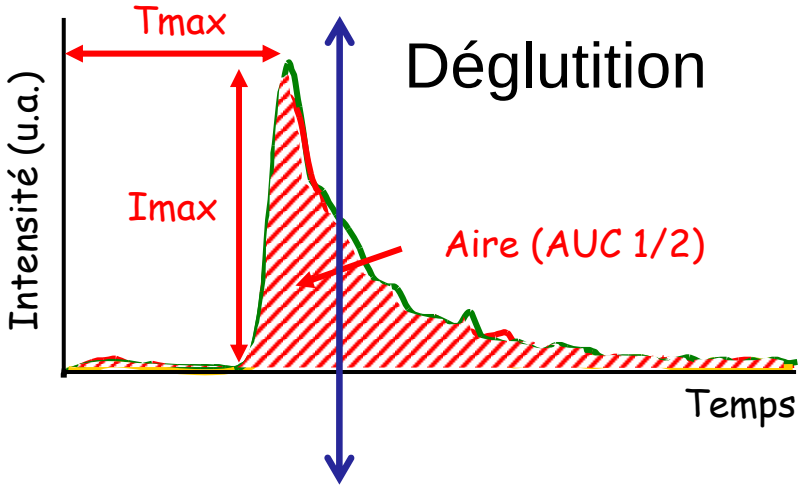
Au cours de la consommation de l'aliment, les arômes sont transférés dans la cavité nasale pour être perçus.

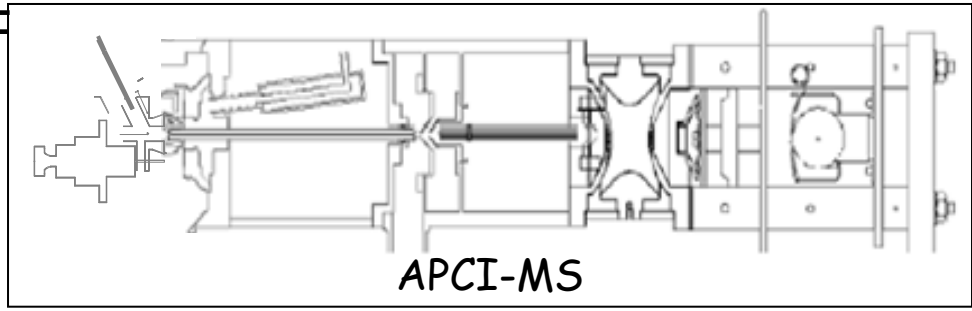


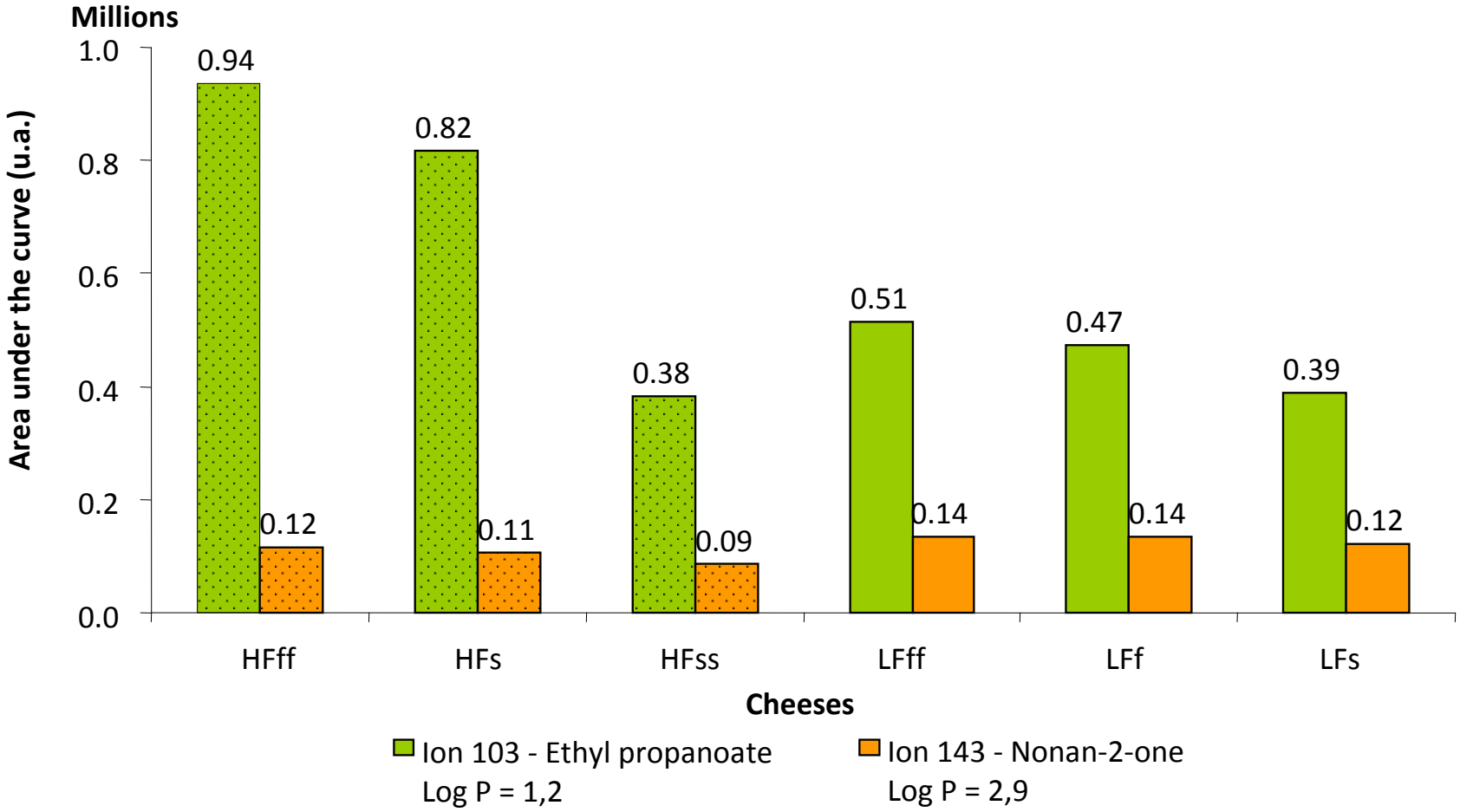


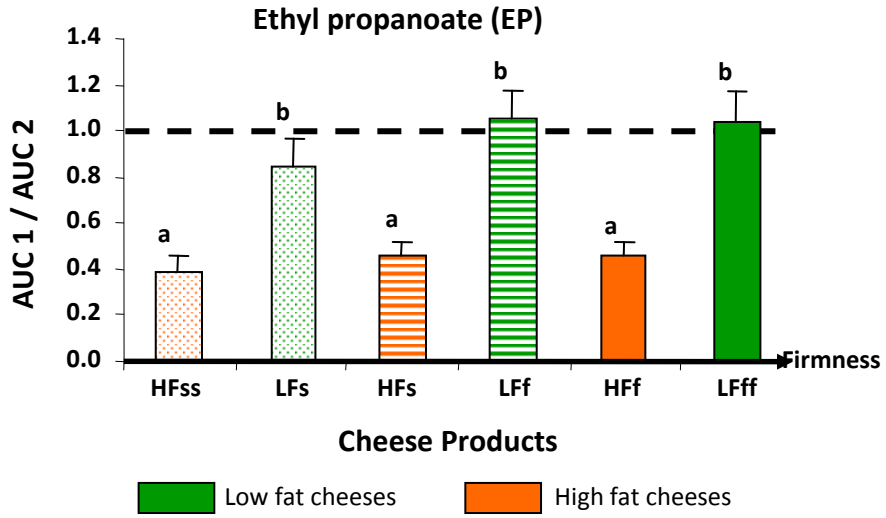

APCI-MS




Déglutition
Tmax
Imax
Intensité (u.a.)
Aire (AUC 1/2)
Temps


APCI-MS

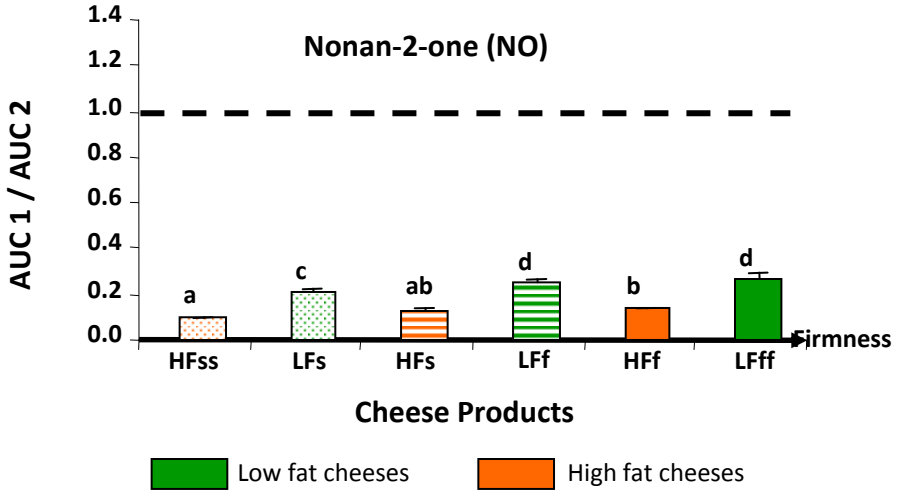

Millions
1.0
0.8
0.6
0.4
0.2
0.0
Area under the curve (u.a.)
0.94
0.12
0.82
0.11
0.38
0.09
0.51
0.14
0.47
0.14
0.39
0.12
HFff
HFs
HFss
LFff
LFf
LFs
Cheeses
Ion 103 - Ethyl propanoate
Log P = 1,2
Ion 143 - Nonan-2-one
Log P = 2,9



Ethyl propanoate:

- Libération équivalente avant et après mastication pour les faibles teneurs en matière grasse

- Libération après mastication est 2X celle avant mastication.



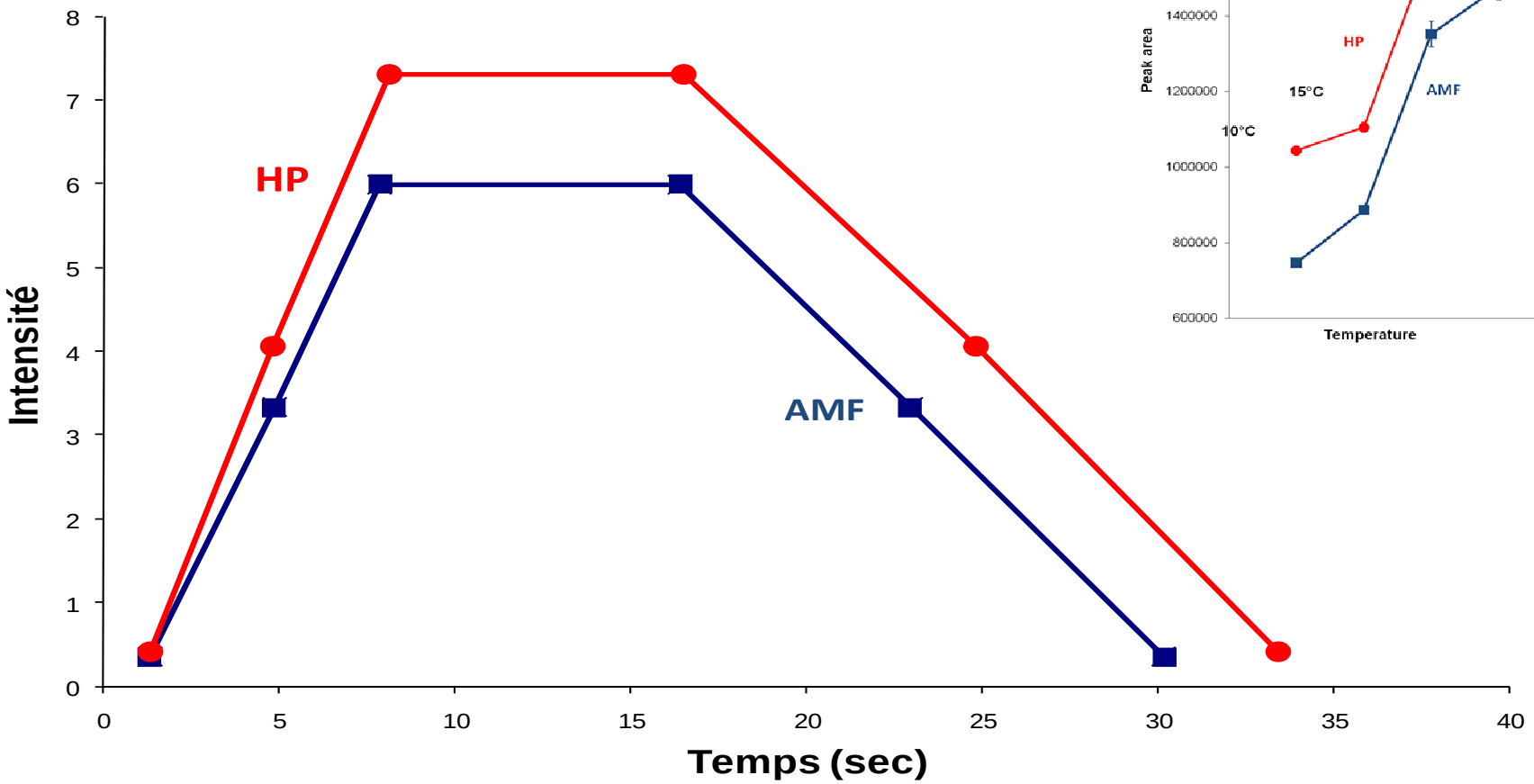
Nonan-2-one:

- Libération surtout après mastication

LE GRAS: SOLVANT DES ARÔMES

EFFET SUR LA PERCEPTION

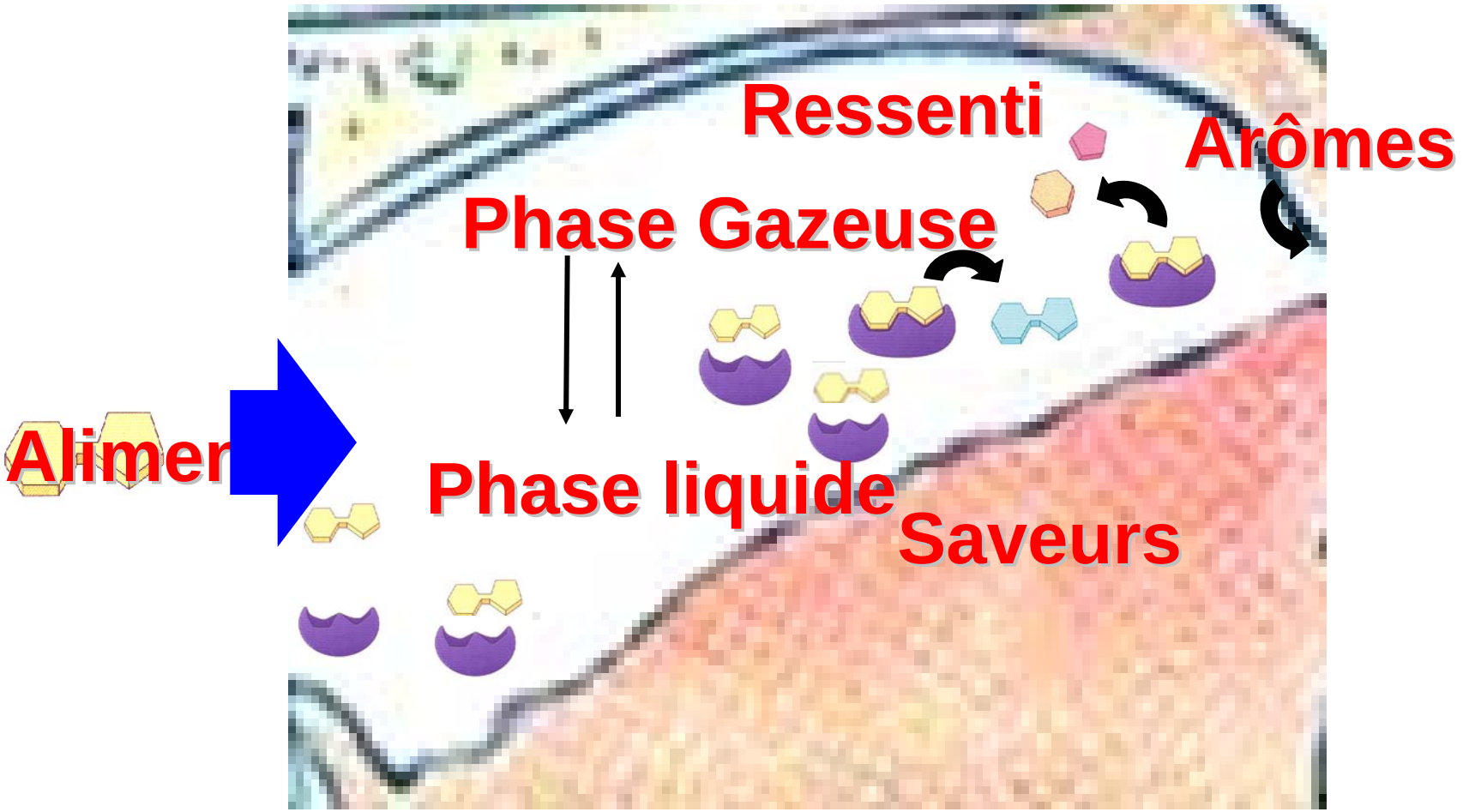
ALIMENTATION
AGRICULTURE
ENVIRONNEMENT


Intensité
Temps (sec)
HP
AMF
0
1
2
3
4
5
6
7
8
0
5
10
15
20
25
30
35
40

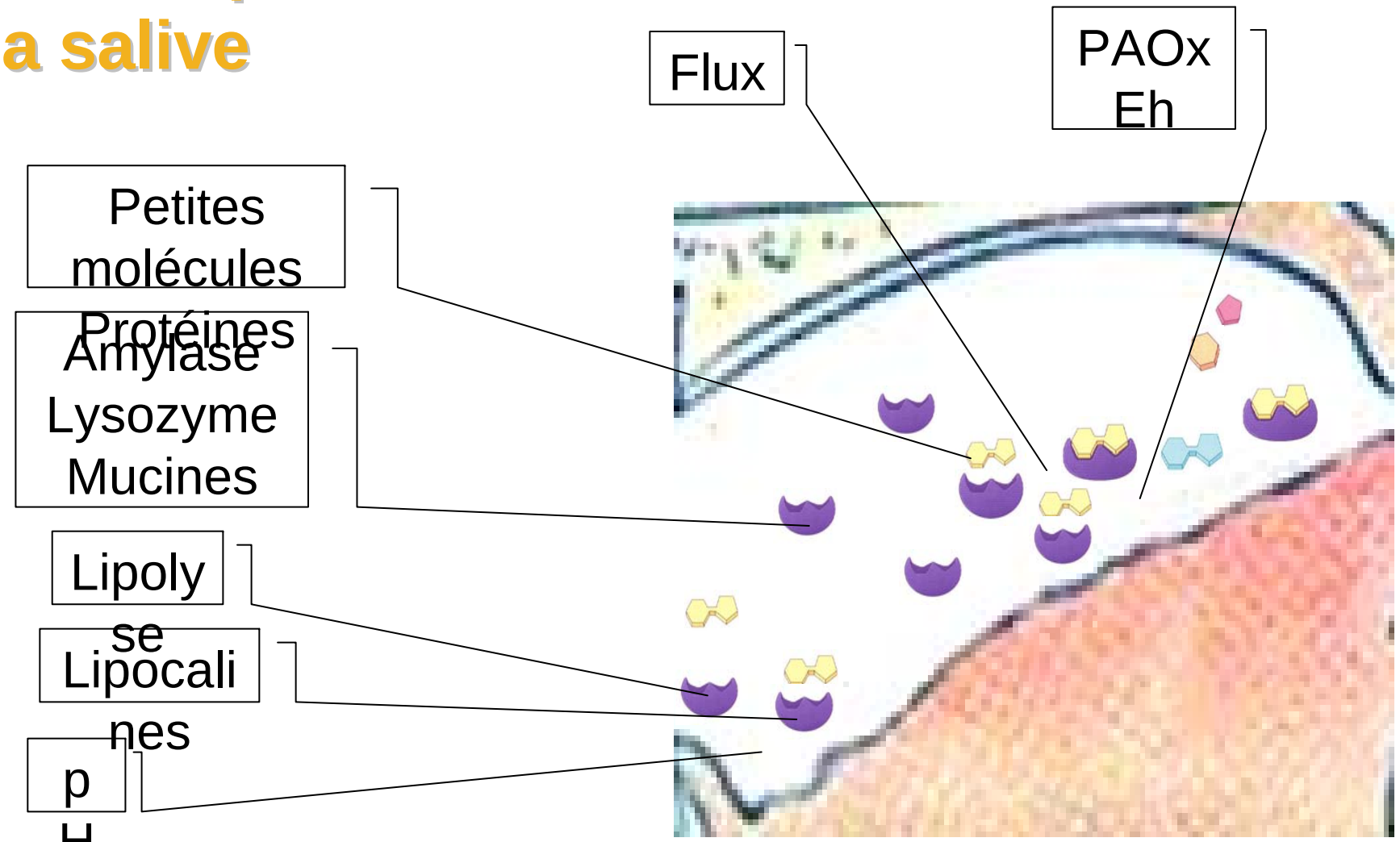
Ethyl hexanoate
Peak area
Temperature
HP
AMF
10°C
15°C
20°C
25°C
2000000
1800000
1600000
1400000
1200000
1000000
800000
600000

LES INTERACTIONS GRAS-ARÔMES-BOUCHE

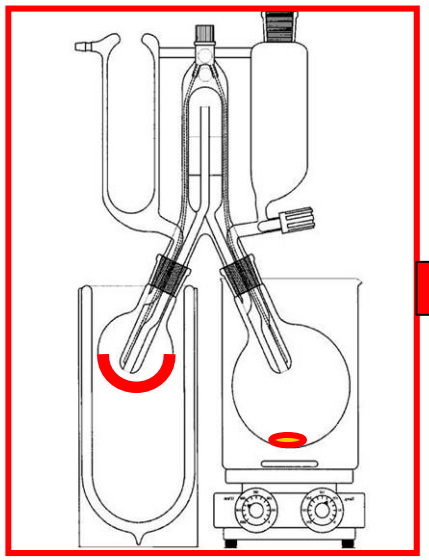
ALIMENTATION
AGRICULTURE
ENVIRONNEMENT


Ressenti
Arômes
Phase Gazeuse
Alimen
Phase liquide
Saveurs

Le rôle possible de la salive

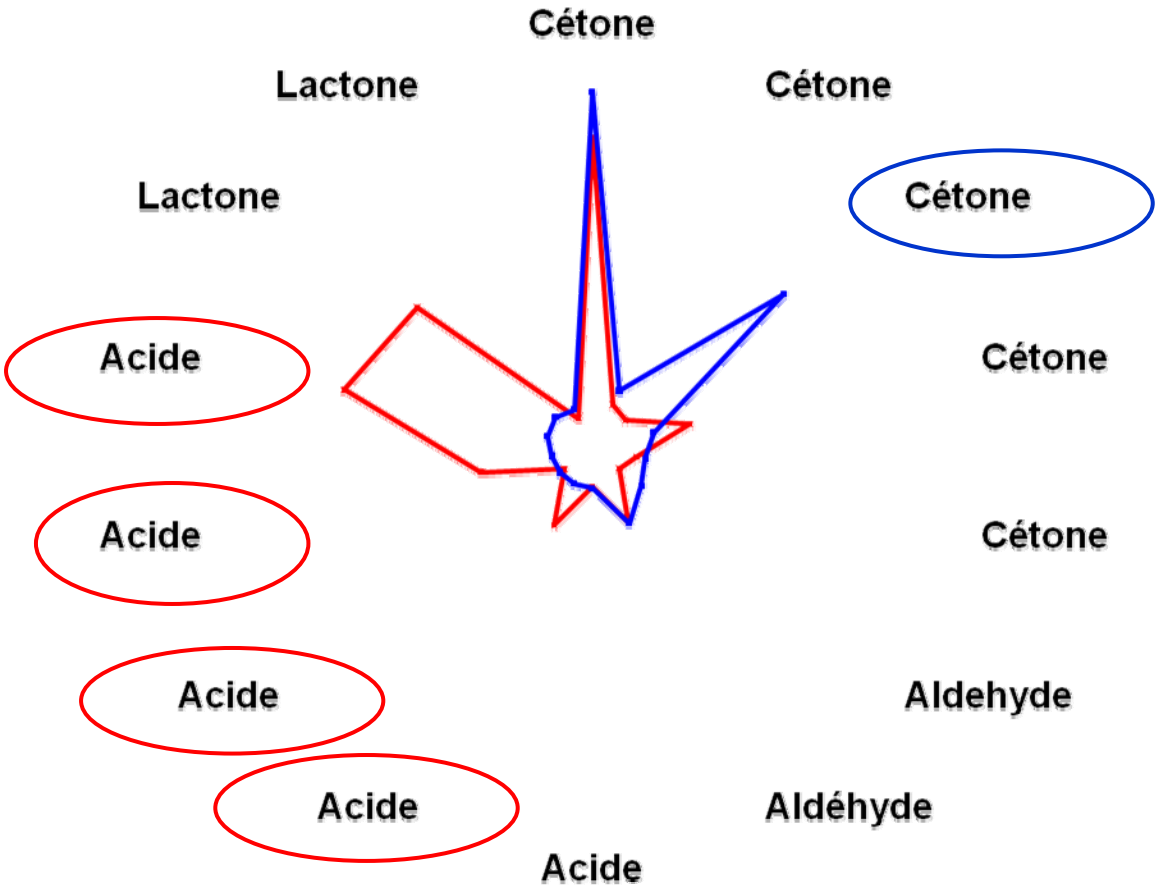


Taux d'incorporation dans le bol de 15 à



Distillation sous vide

Réacteur salivaire

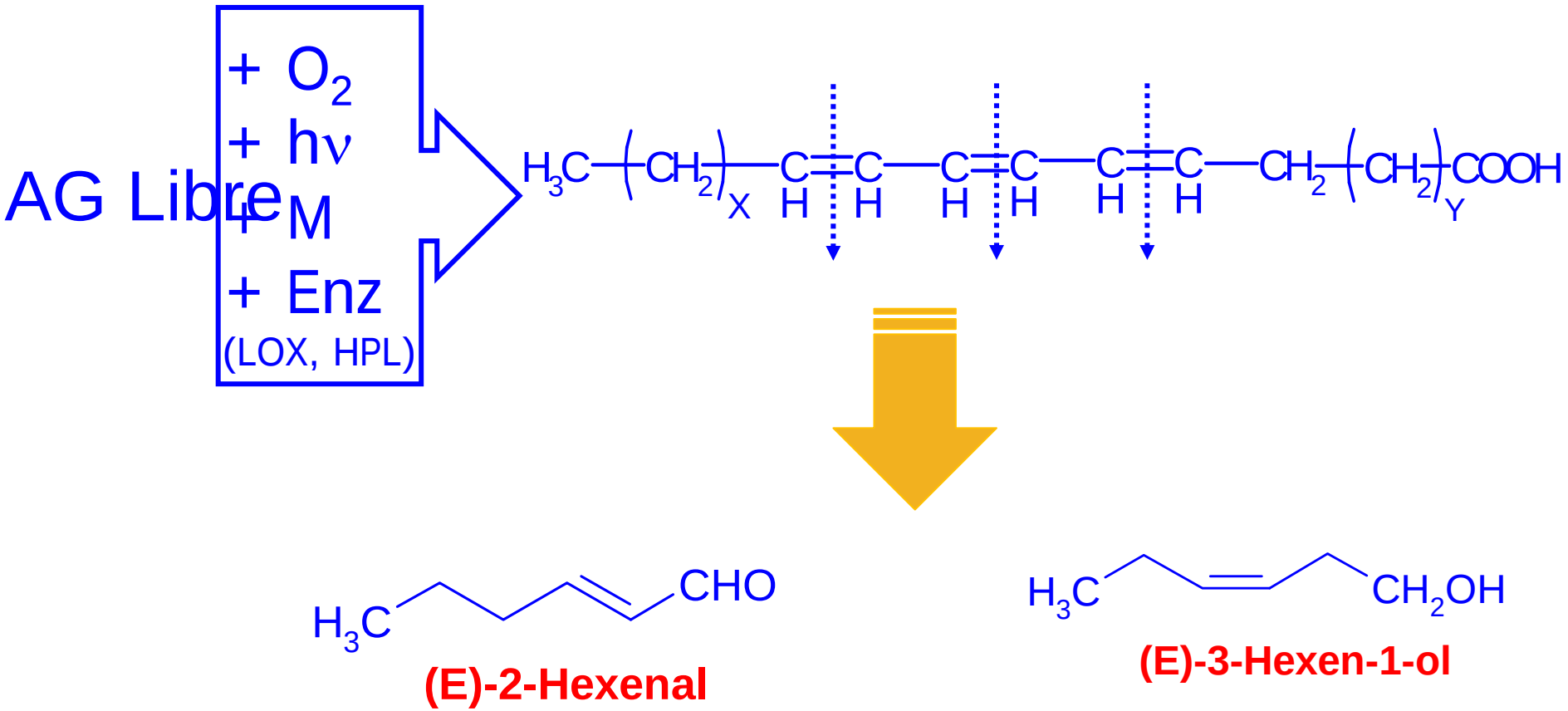


Le profil aromatique bouge en «condit

LES LIPIDES: SOURCE D'ARÔMES EN BOUCHE OU « LA RÉACTION »

ALIMENTATION
AGRICULTURE
ENVIRONNEMENT

INRA



(E)-2-Hexenal

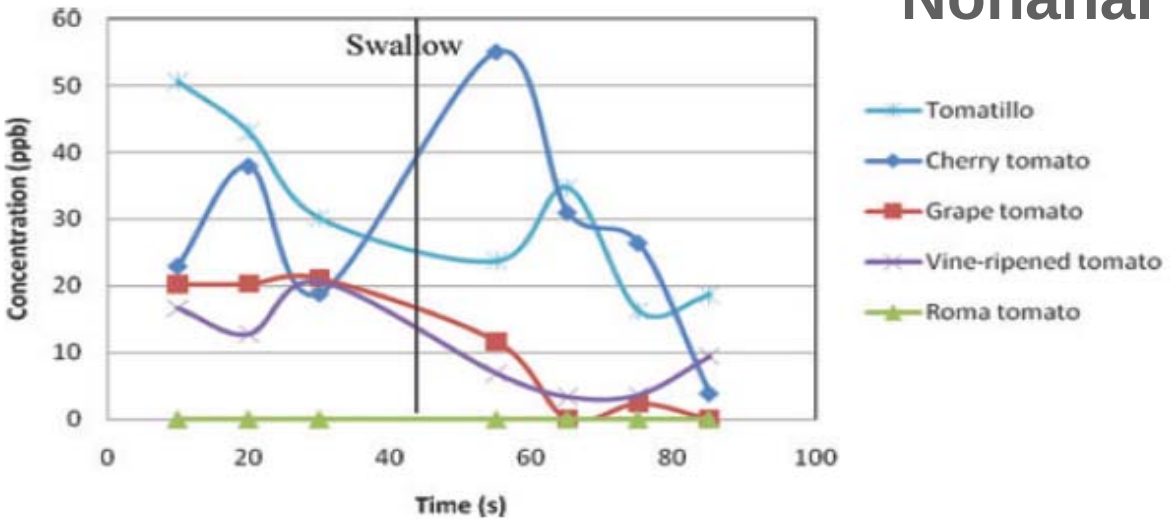
(E)-3-Hexen-1-ol

Formation et libération des arômes en bouche

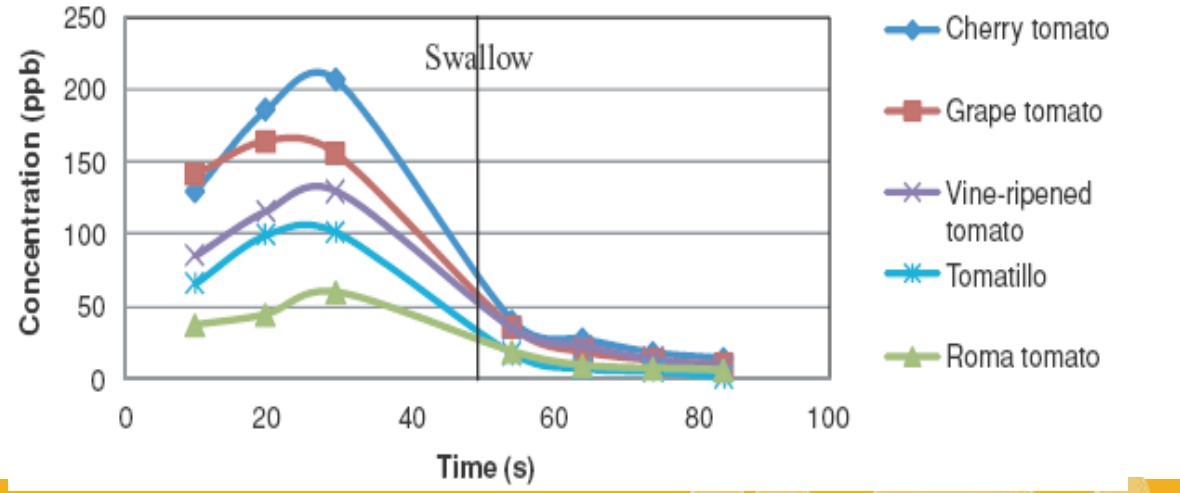
Exemple de la tomate

Y. XU & S. BARRINGER, 2010

Nonanal



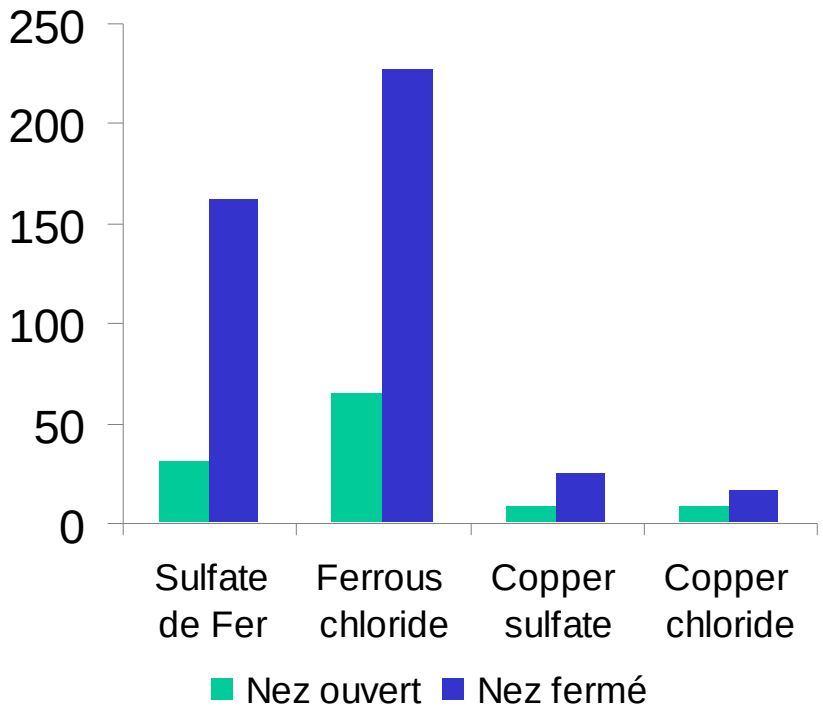
(E)-2-héxé



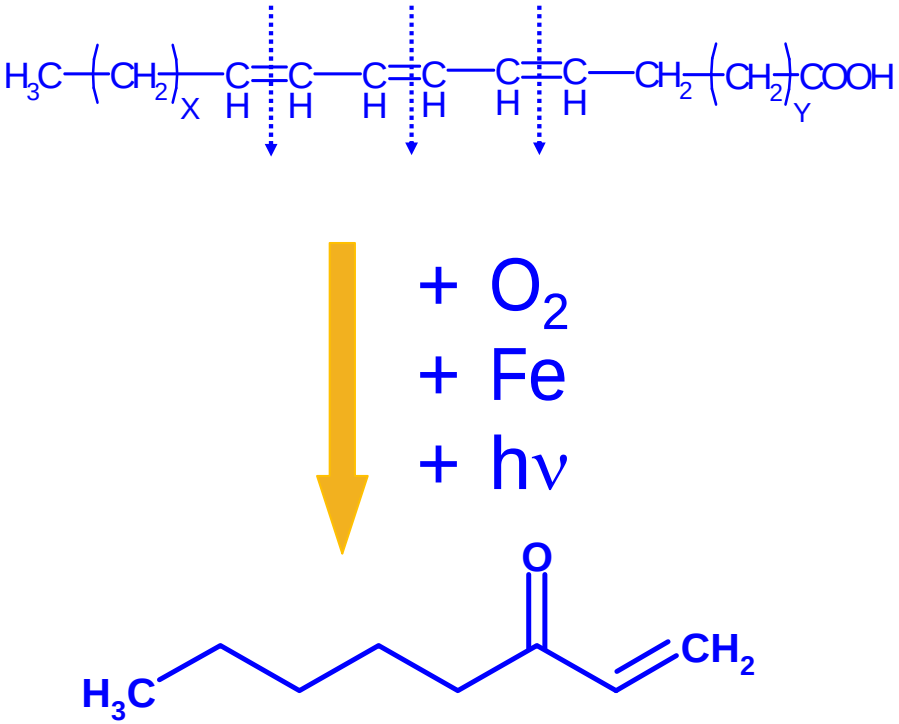
Le « métallique »

(Epke et Lawless, 2007; Glindenmann, 2006)

En bouche ….



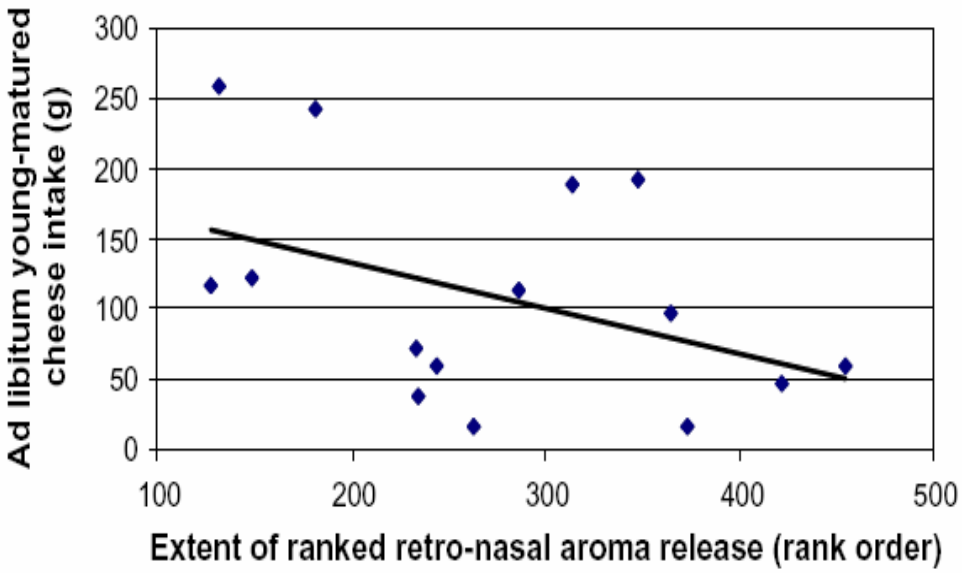
Sur la peau …



CONCLUSIONS

Lipides et arômes > multi-échelles …

- **Solvant des arômes**
- **Source d'arômes**
- **Approche systémique et intégrée de la perception > Mécanismes en bouche**
- **Utilisation raisonnée plus qualitative que quantitative ?**
- **Ex: contrôle de la prise alimentaire ..**



Effet de la libération des Arômes sur la consommation de fromage

Ruijschop - 2009

Carrefours de l'innovation agronomique

Merci de votre attention

ALIMENTATION
AGRICULTURE
ENVIRONNEMENT

INRA