

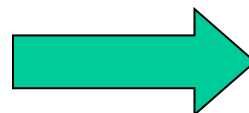
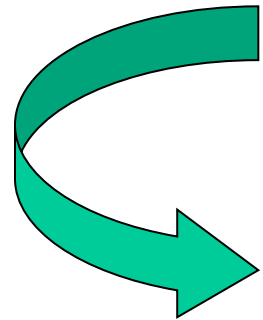
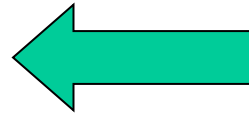
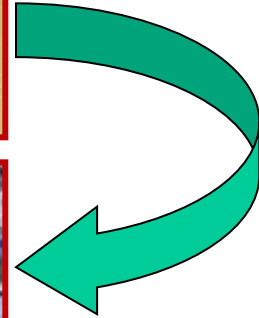


**Propiedades saludables del
polen apícola dependiendo de
su origen botánico**

**Health benefits of bee pollen
depending on its botanical
origin**

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Dra. Amelia Virginia González Porto, Centro Agrario de Marchamalo, JCCM



PRESIDENCIA DEL GOBIERNO

23961

REAL DECRETO 2884/1978, de 8 de octubre, por el que se fijan precios diferenciales para los excesos de consumo de ciertos productos petrolíferos y se establecen medidas de control de rendimientos energéticos en industrias.

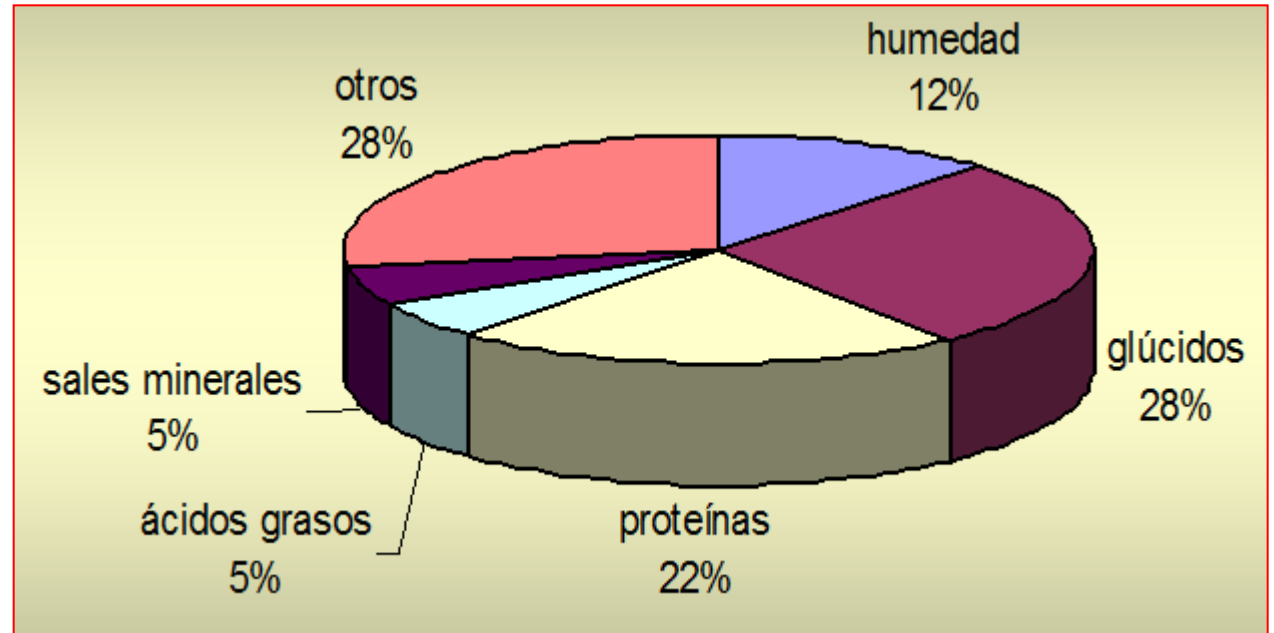
3.3. Alimentos especiales considerados tradicionalmente como específicos para regímenes dietéticos.

3.3.1. Levaduras.

3.3.2. Germen de trigo.

3.3.3. Polen, jalea real.

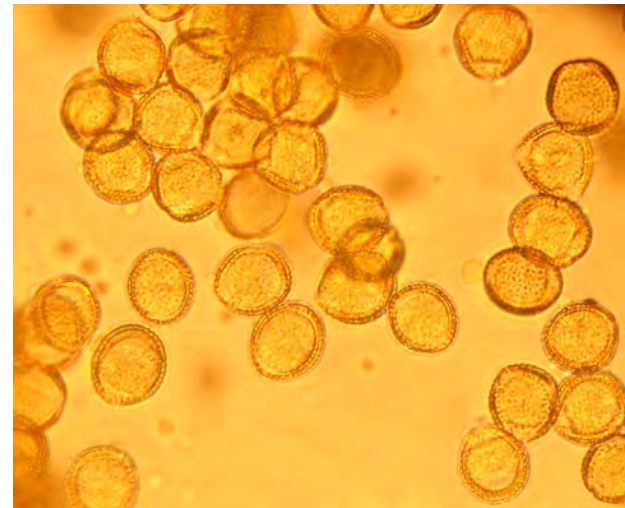
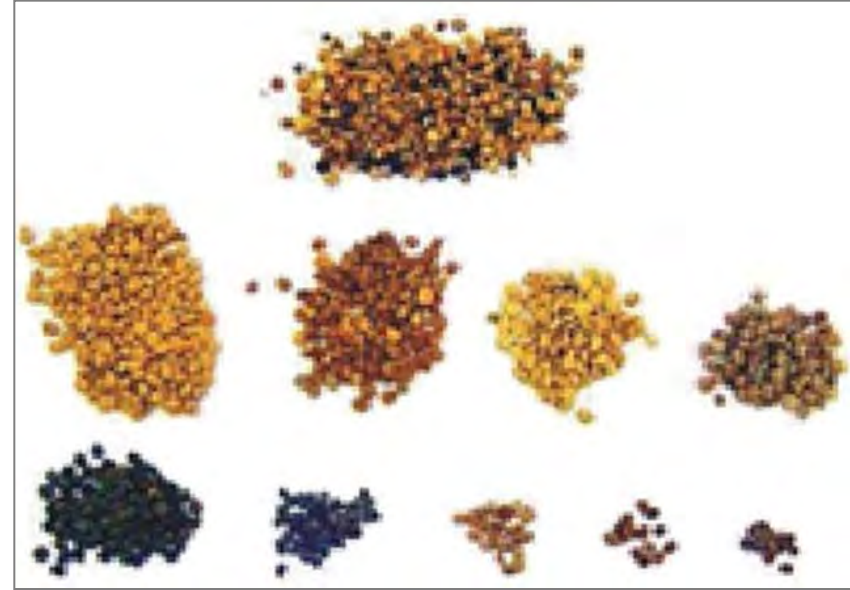
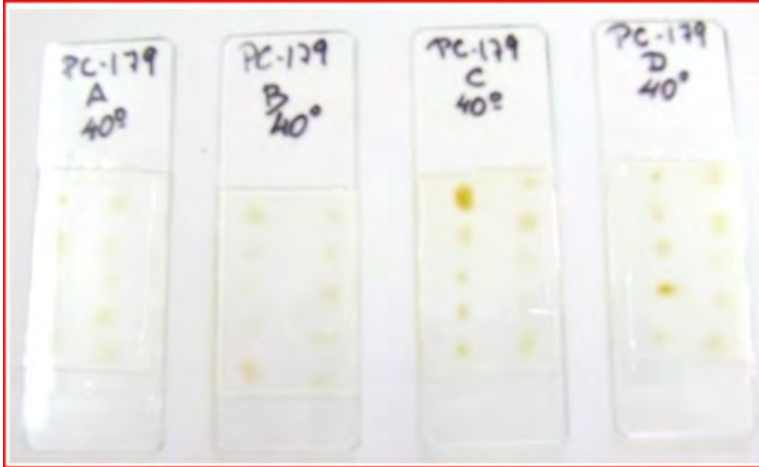
3.3.4. Alimentos no refinados (cereales y harinas integrales, azúcar moreno, etc).



Traditionally

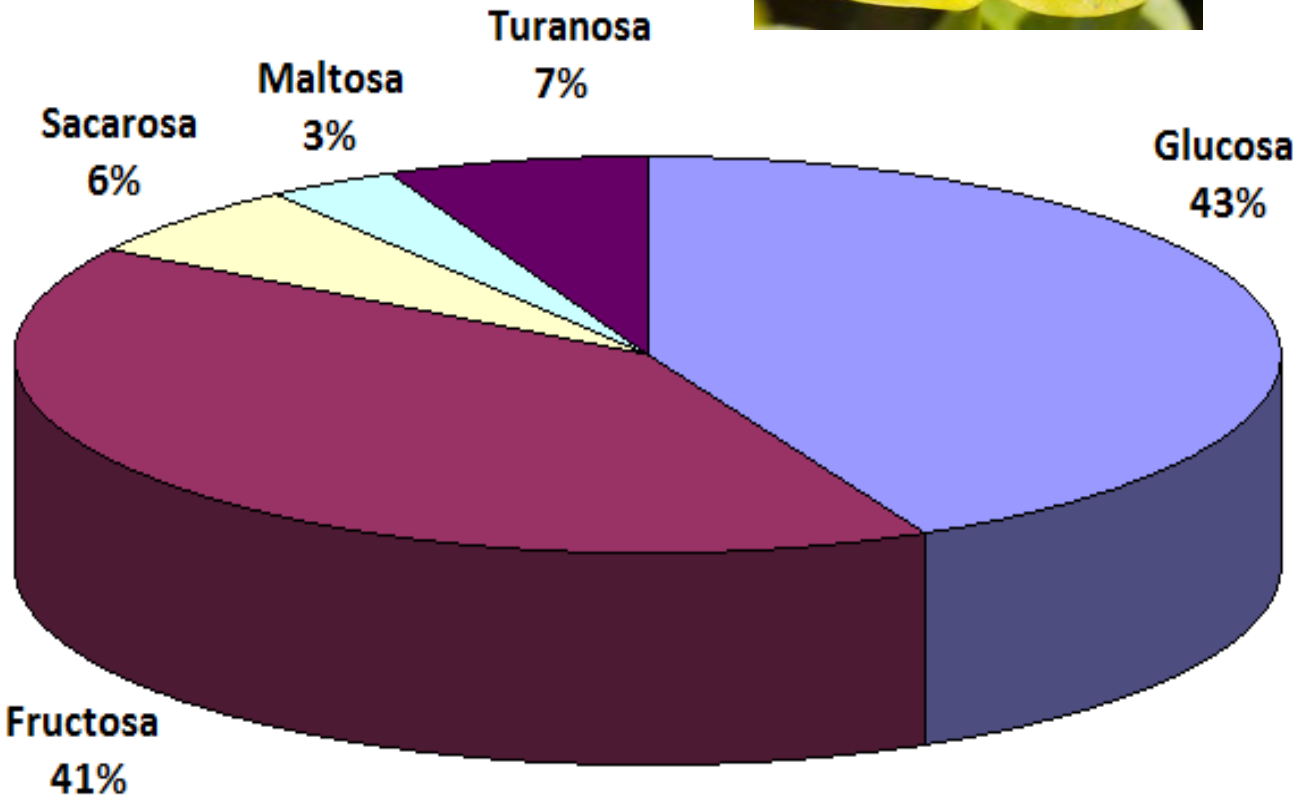
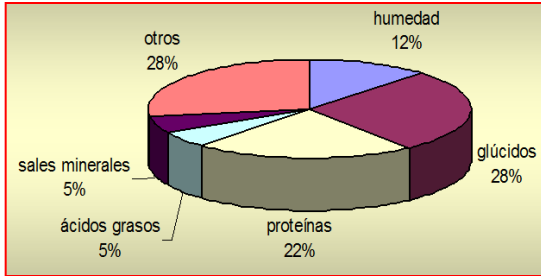


Relation pollen / vegetation

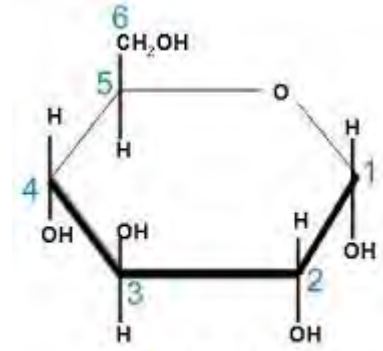


NUTRITIONAL AND HEALTHY VALUES RELATED TO VEGETATION

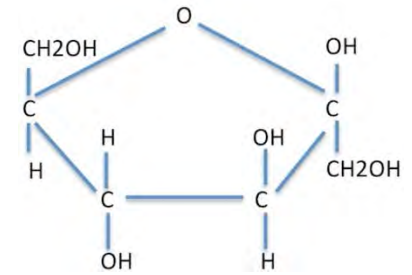
Parameter	Methodology	Function
Sugars	HPLC technique	To know which are the predominant sugars and their contents
Fiber	various techniques (acids / alkalis)	To know total crude fiber content
Proteins	Kjeldahl technique	To know total proteins content
Polyphenols	Folin-Cicalteu technique	To know total polyphenols content
Vitamins	HPLC technique with UV detection UV	To know Vitamin C content



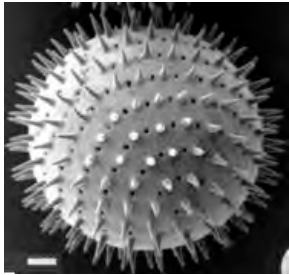
Mono > 80 %



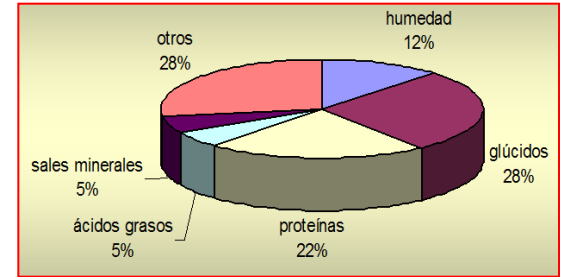
Glucosa



Fructosa



10 – 14.4 g / 100 g

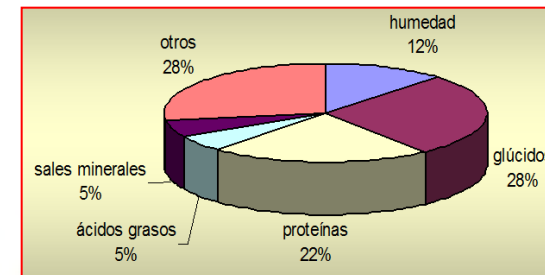


Los alimentos con más fibra

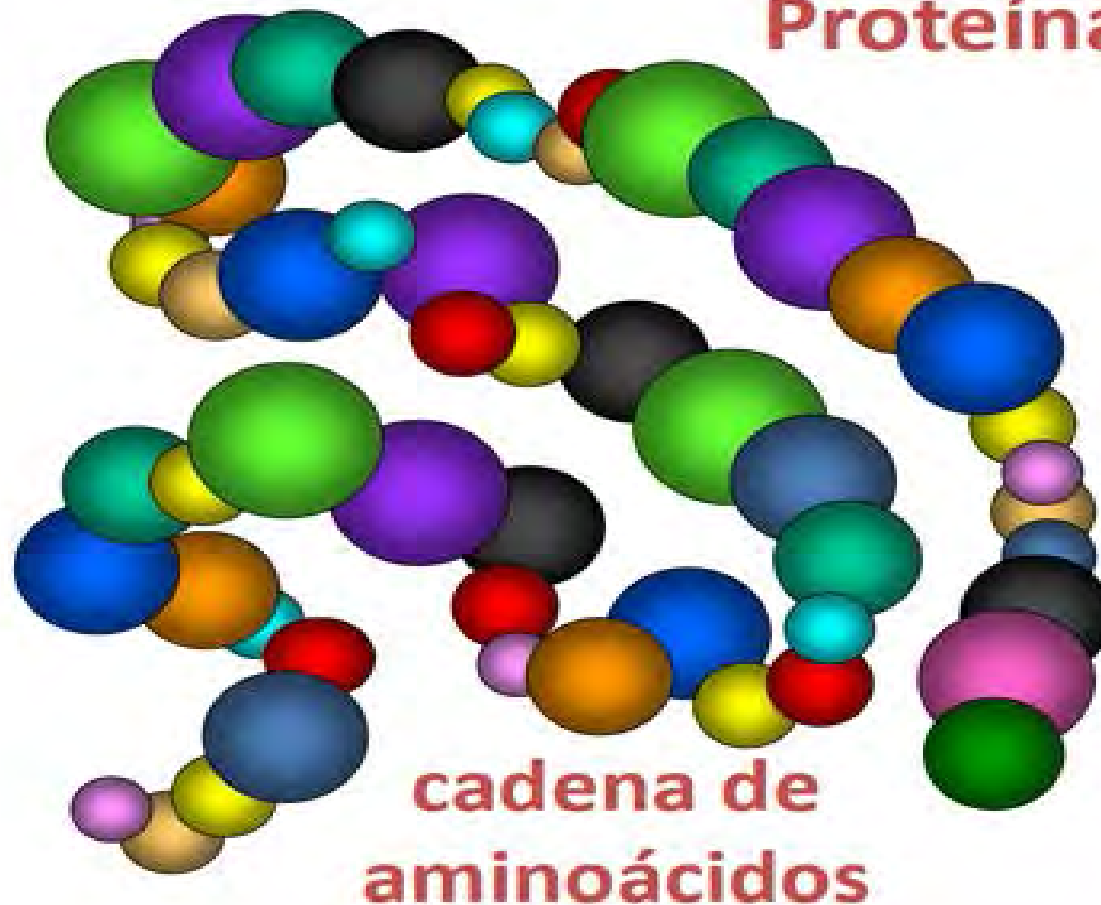
Gramos de fibra
cada
100 gramos

SALVADO DE TRIGO	ALMENDRAS	COCO	PAN INTEGRAL	RÁBANOS, CACAHUETES	HABAS, JUDÍAS	ESPINACAS Y AVELLANAS	ARROZ INTEGRAL	
44	14,3	13,6	8,5	8,1	7,4	6,3	5,5	
GUI SANTES	LENTEJAS	PERA, PLÁTANO	ZANAHORIA	COLES DE BRUSELAS	PAN BLANCO	REMOLACHA	CIRUELAS, MANZANAS Y NARANJAS	COLIFLOR, REPOLLO Y APIO
5,1	3,7	3,3	3	2,9	2,7	2,5	2,0	1,7

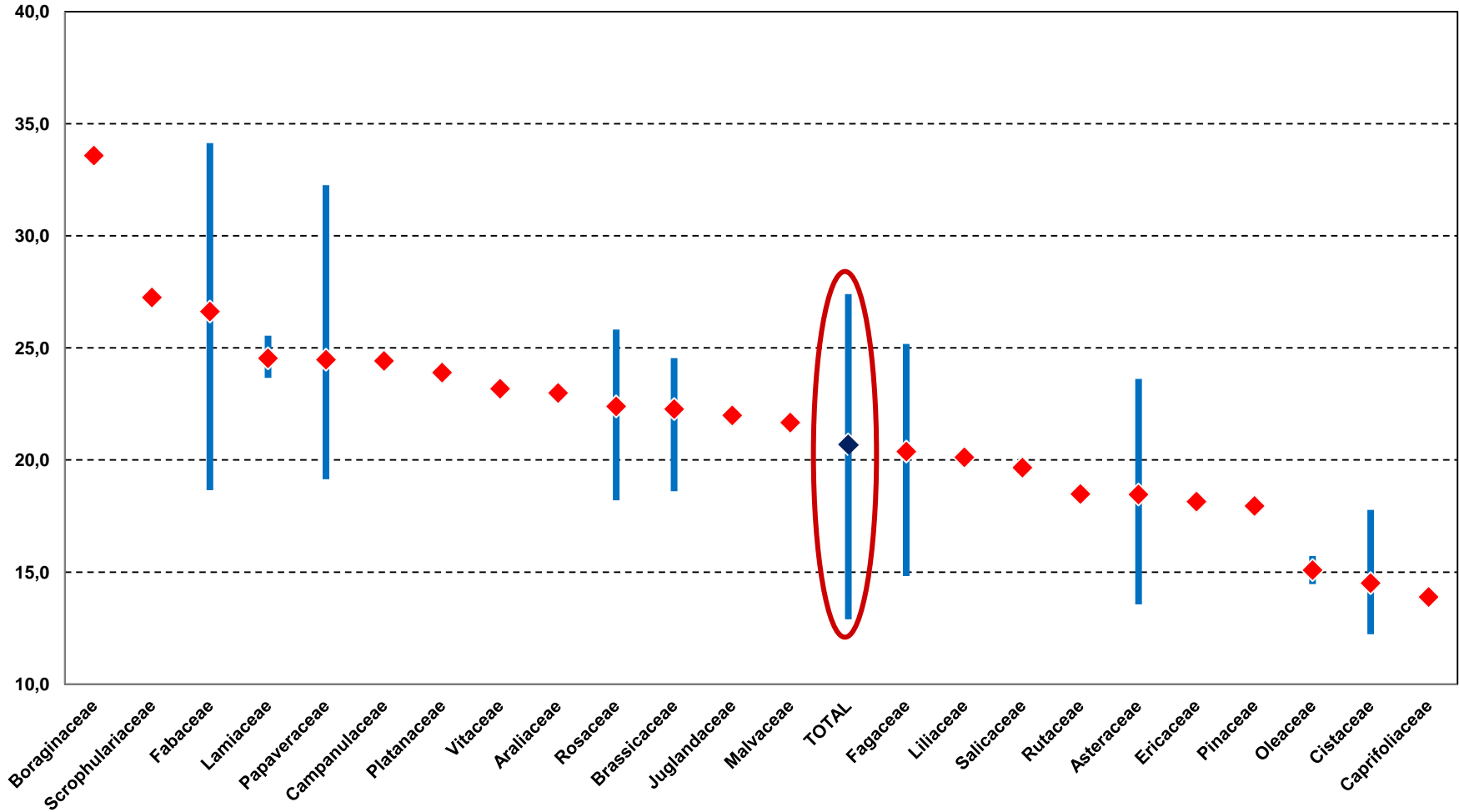
13 – 27 % total SAMPLE



Proteína



Protein content in bee pollen



***Echium* (33.61 %)**



***Papaver* (29.94 %)**



***Retama* (26.26 %)**

***Teucrium* (24.54 %)**



***Campanula*
(24.42 %)**



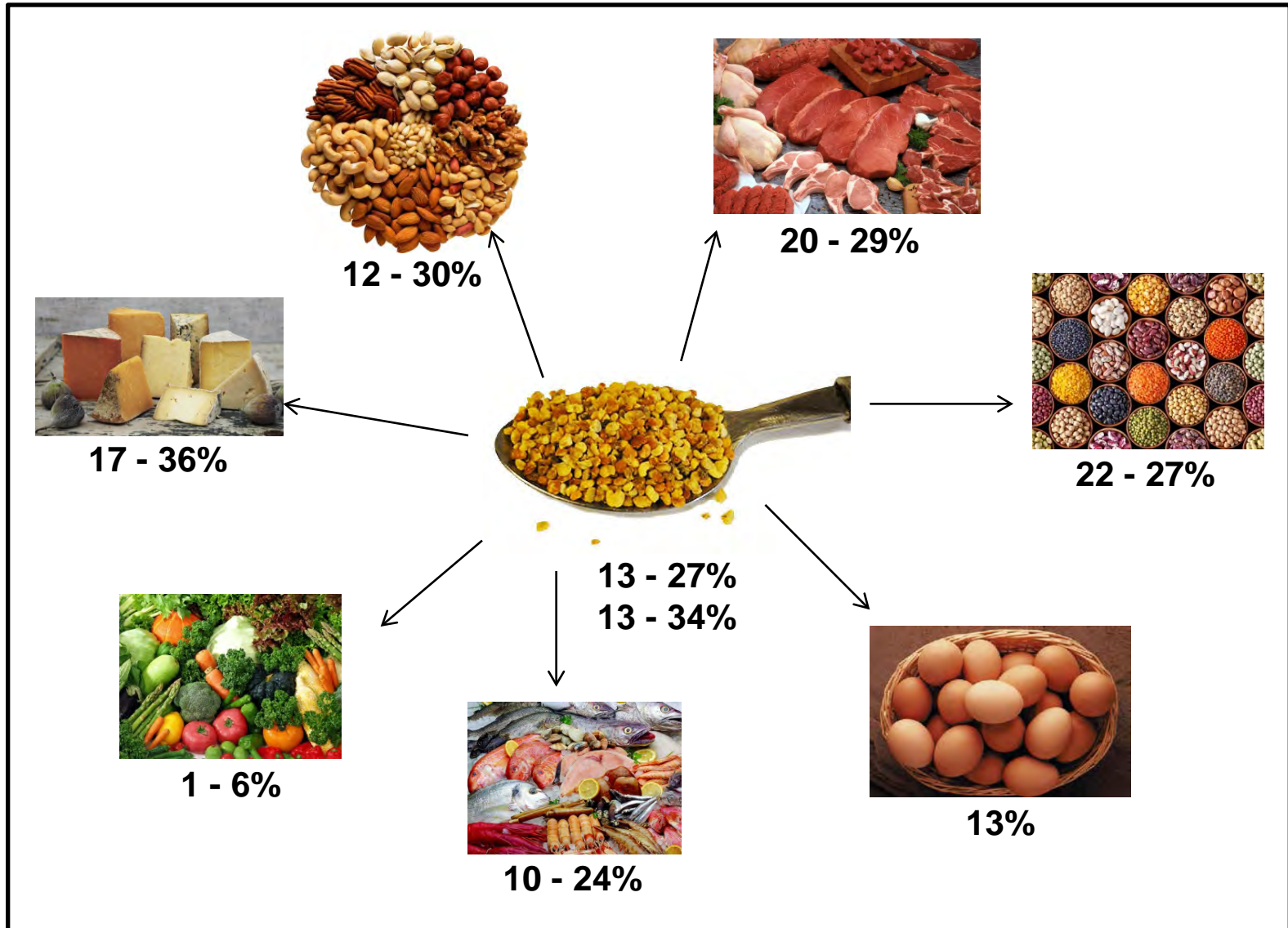
***Cistus* (15.57 %)**



***Olea* (15.01 %)**

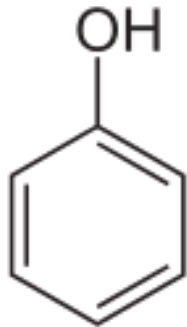
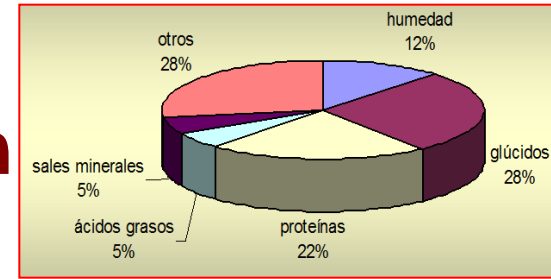


***Lonicera* (13.9 %)**


























POLYPHENOLS = FLAVONOIDS (total sample)

0.75 – 3.69 g gallic acid / 100g pollen
(in total sample)

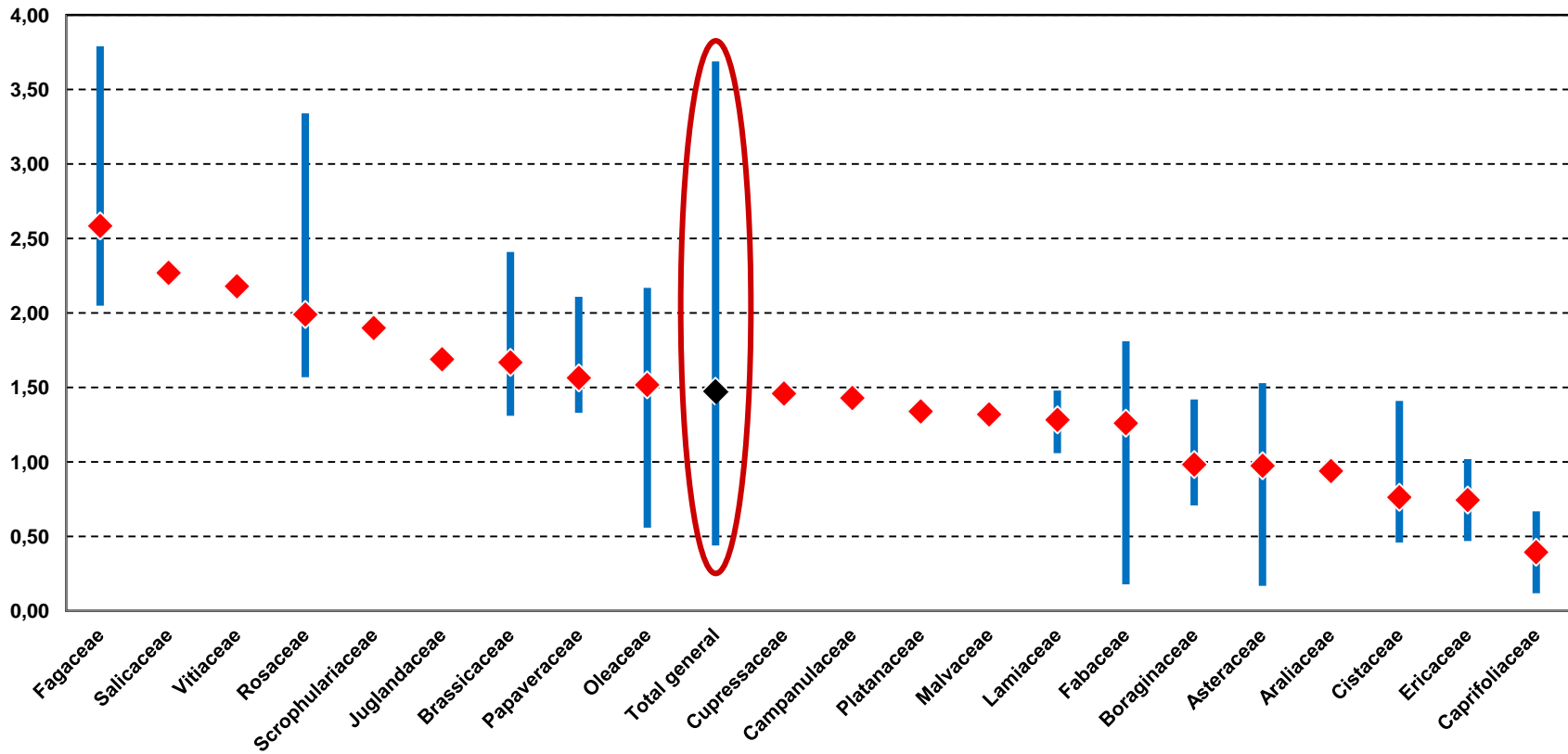


Grupo fenol

BLANCO-VERDE	<p>Pigmento: Flavonoides Efecto: Protección celular, disminución del colesterol-LDL saludable:</p>	 Pera  Cebolla  Esparrago  Manzana
AZUL-ROJO OSCURO	<p>Pigmento: Antocianinas Efecto: Aumento flujo sanguíneo, disminución de la inflamación vascular. saludable:</p>	 Grosella  Ciruela  Cereza  Arándano negro  Arándano
ROJO	<p>Pigmento: Licopeno Efecto: Disminución riesgo cáncer próstata. saludable: Prevención enfermedad cardiovascular.</p>	 Tomate  Pomelo  Sandía  Guayaba  Papaya
NARANJA	<p>Pigmento: Betacaroteno Efecto: Efecto antioxidante al captar radicales libres, Disminución riesgo cáncer, Mejora del sistema inmune. saludable:</p>	 Zanahoria  Calabaza  Albaricoque  Mango  Goji
AMARILLO-NARANJA	<p>Pigmento: Carotenoides Efecto: Mejora del sistema inmune. saludable: Ayuda a combatir el stress oxidativo.</p>	 Naranja  Mandarina  Melocotón  Piña

POLYPHENOLS = FLAVONOIDS (botanical origin)

Polyphenols content in bee pollen





Fagaceae

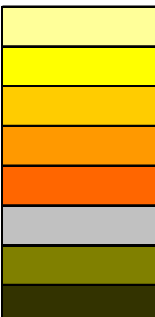
(2 - 3.8 g gal. ac. / 100g pollen)

Vitaceae

(2.2 g gal. ac. / 100g pollen)

Salicaceae

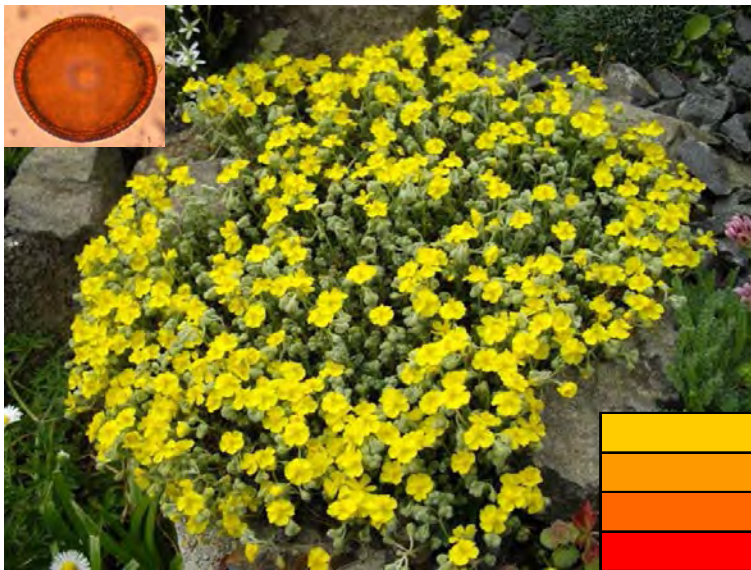
(2.3 g gal. ac. / 100g pollen)



Rosaceae

(1.6 - 3.3 g gal. ac. / 100g pollen)

POLYPHENOLS = FLAVONOIDS



Cistaceae

(0.52 – 1.4 g gal. ac. / 100g pollen)



Caprifoliaceae

(0.7 – 0.1 g gal. ac. / 100g pollen)





















Ericaceae

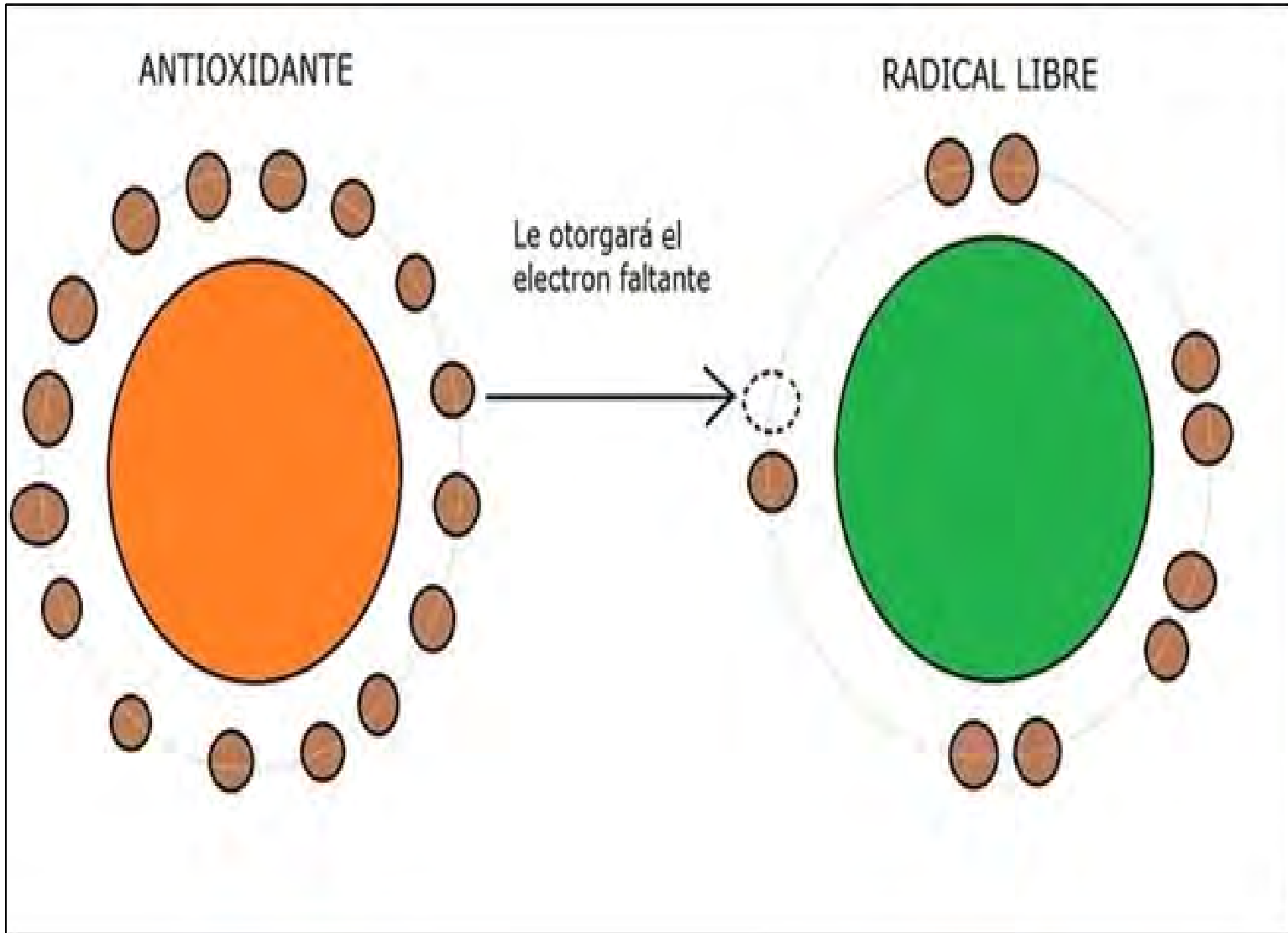
(0.5 g gal. ac. / 100g pollen)



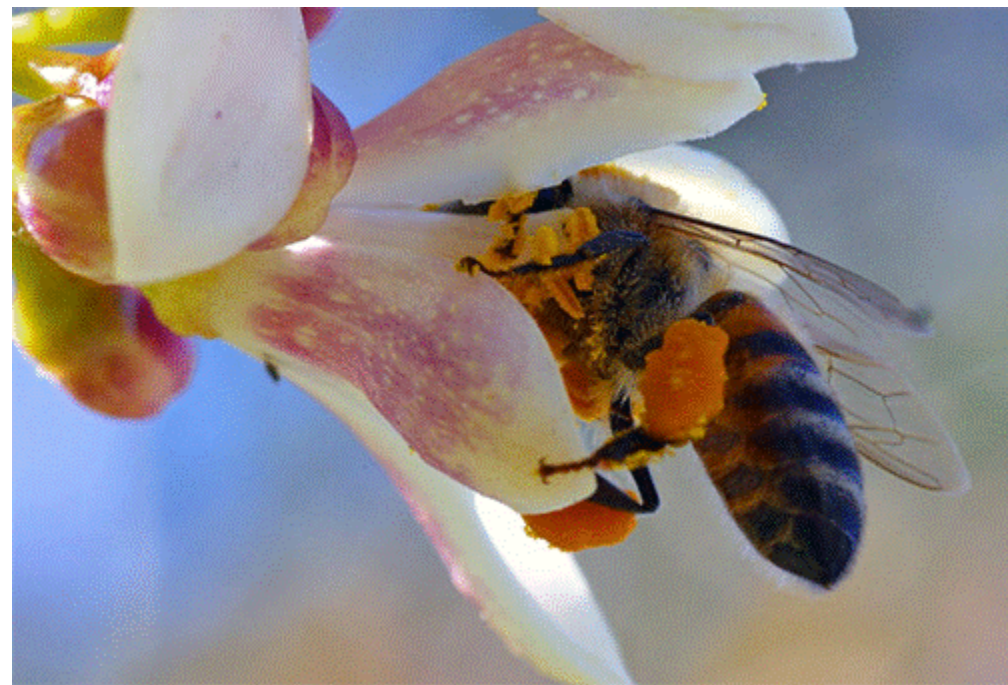
Araliaceae

(0.94 g gal. ac. / 100g pollen)

POLYPHENOLS IN FOOD	
Group	Major food sources
<i>Anthocianyins</i>	   
<i>Flavonols</i>	   
<i>Flavonols</i>	   
<i>Flavonoids</i>	
<i>Flavones</i>	   
<i>Isoflavones</i>	











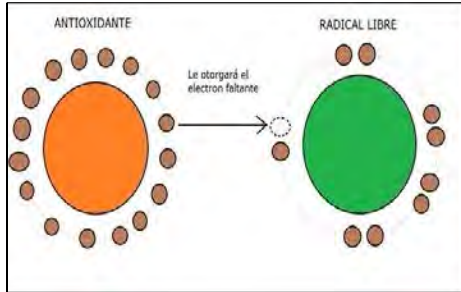
VITAMINS (total sample)



(7 - 56 mg/100g)



Food (100 g)	Vitamin C (mg)	Food (100 g)	Vitamin C (mg)
	130		50
	90		40
	70		26
	60		26



Vitamin C

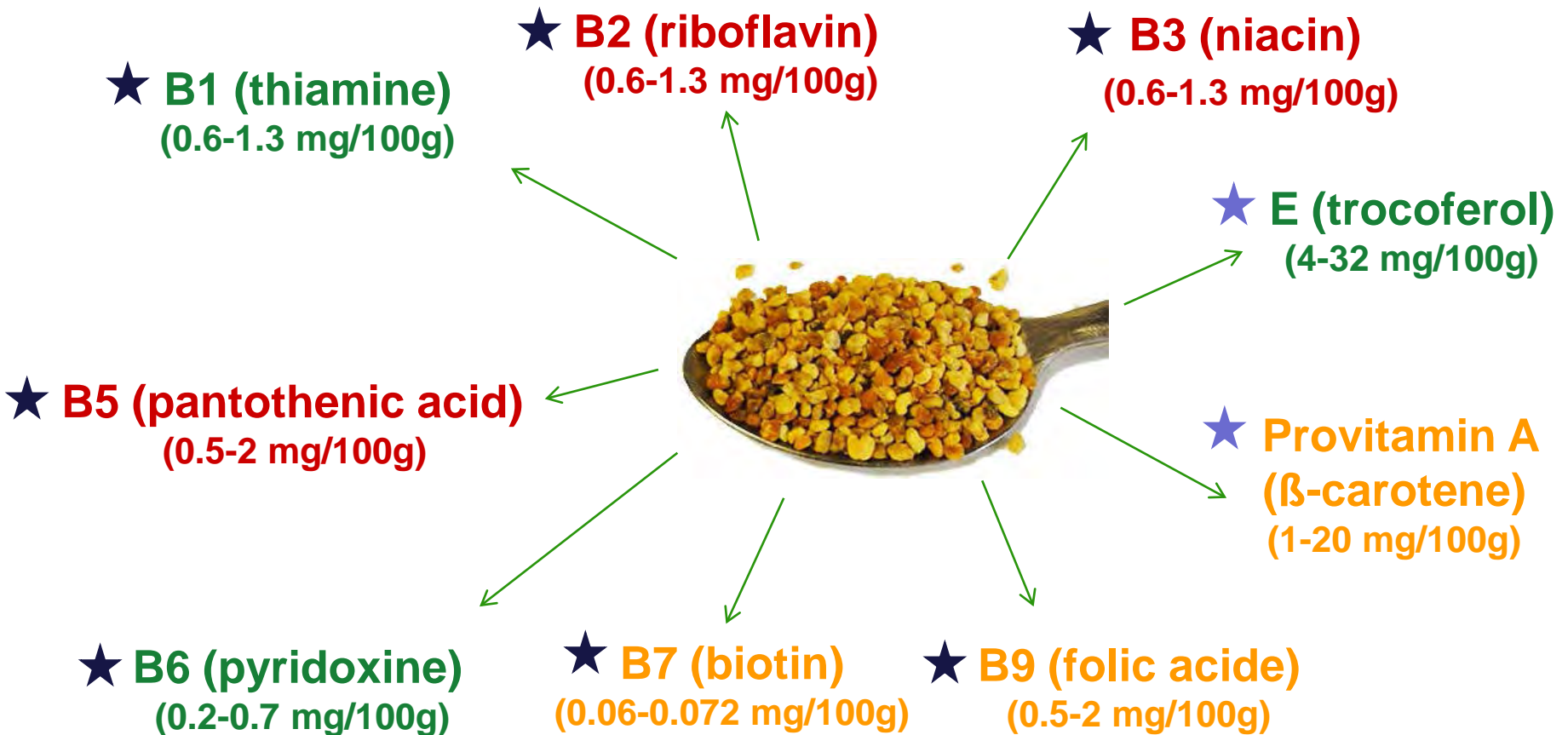
- 1 **Antioxidant** par excellence
- 2 **Improves eyesight**
- 3 **Increases good cholesterol**



Very healthy **4**
for **skin**

Helps form **5**
collagen

Improves **6**
depression







Similar to other foods

Less than other foods

Greater than other foods

★ Hidrosoluble

★ Liposoluble

-  Bee pollen is an important natural product constituted by vitamins, polyphenols proteins, carbohydrates, fiber, etc., so it should be considered as a food.
-  And this composition is closely related to the botanical origin of the bee pollen.
-  Cistaceae pollen, family well represented in Mediterranean region, has low total content both, in protein as polyphenols.
-  In order to obtain better nutritional and healthy product, this information can guide beekeepers in the location of their hives.



**THANK YOU FOR YOUR
ATTENTION**