



**Marine bioactives
for dietary supplements**

**Copalis[®]
& functional foods**



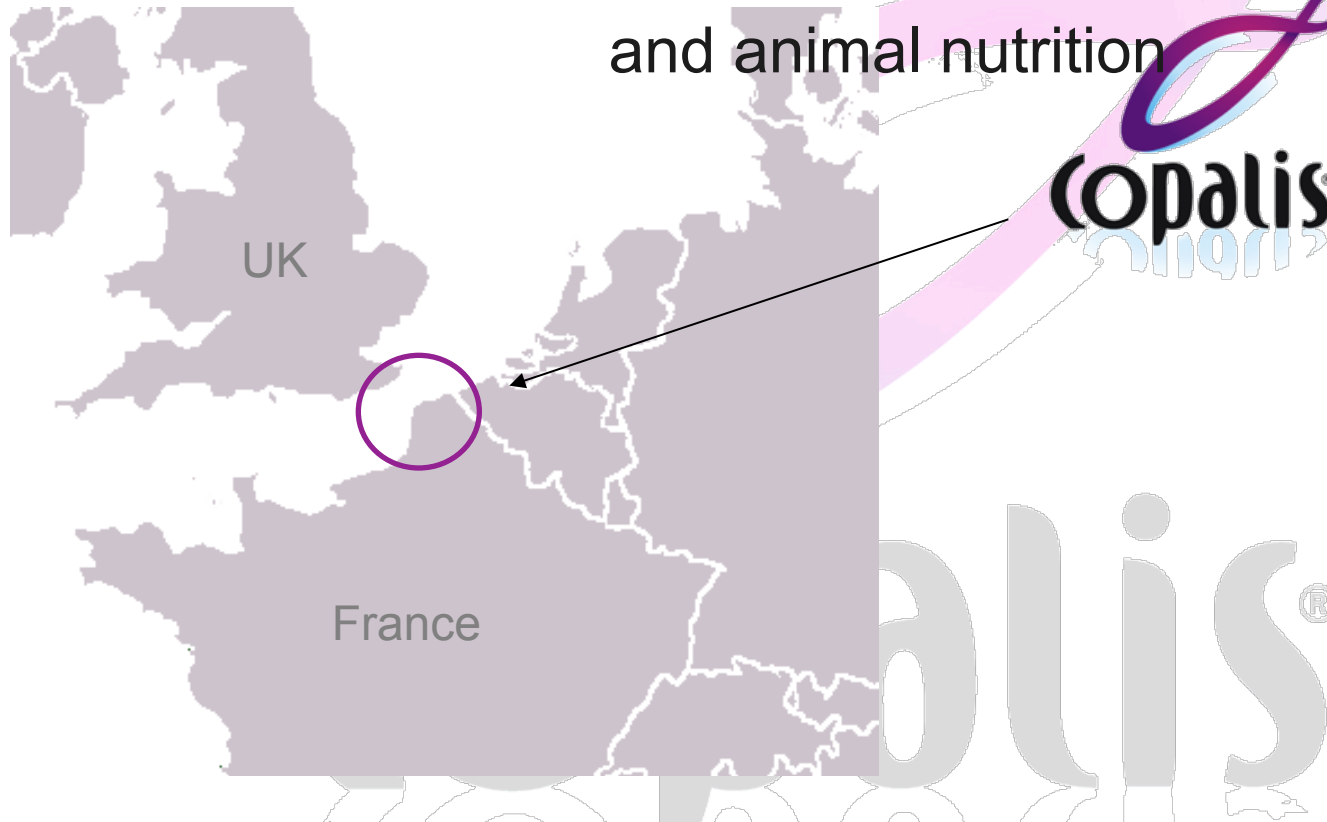
COPALIS is at the heart of the marine resource
Located in the 1st European centre for the transformation,
as a source of constant innovation...
commercialization and distribution of seafood products

for dietary supplement

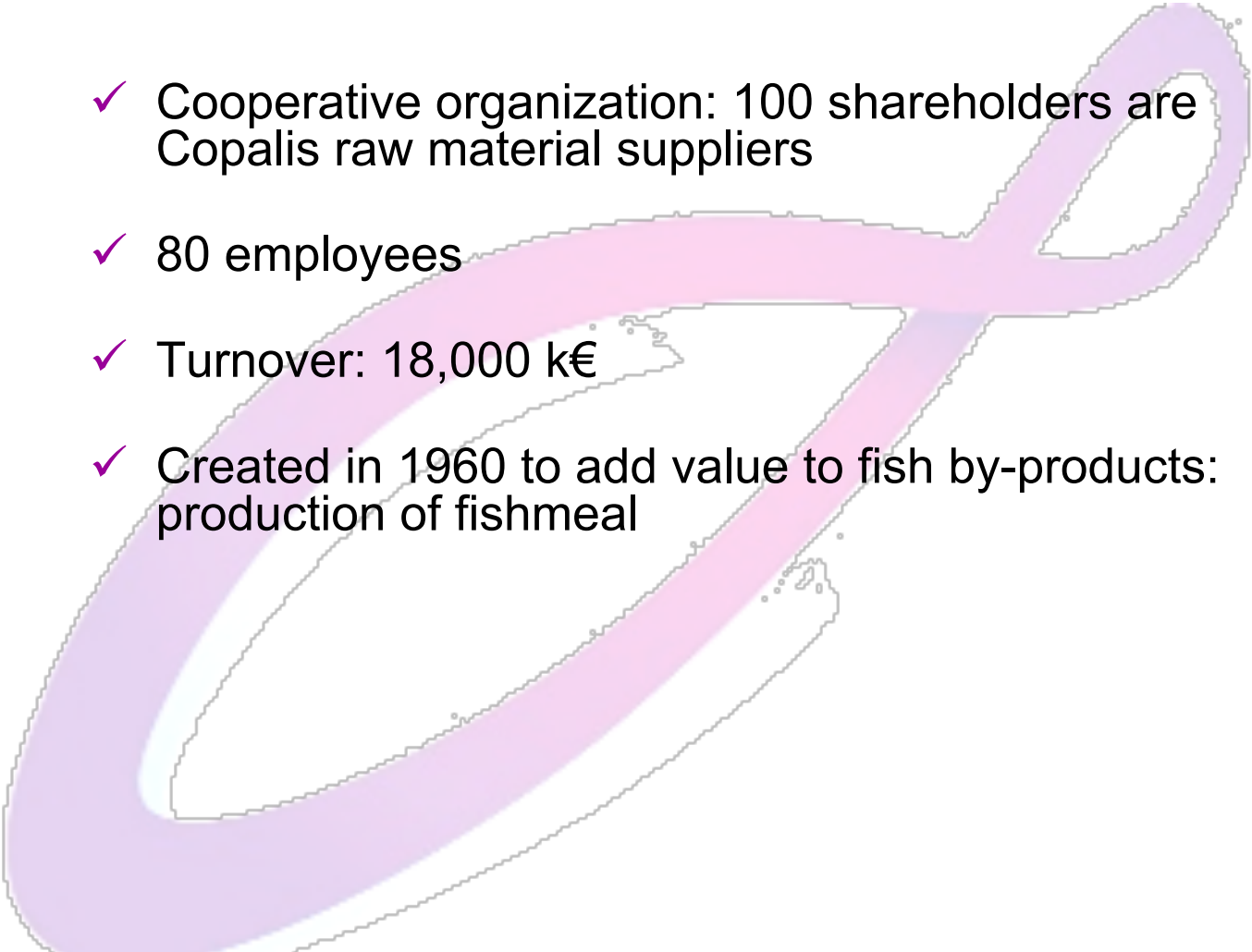
functional food, cosmetics

and animal nutrition

Copalis
COPALIS



A few figures...

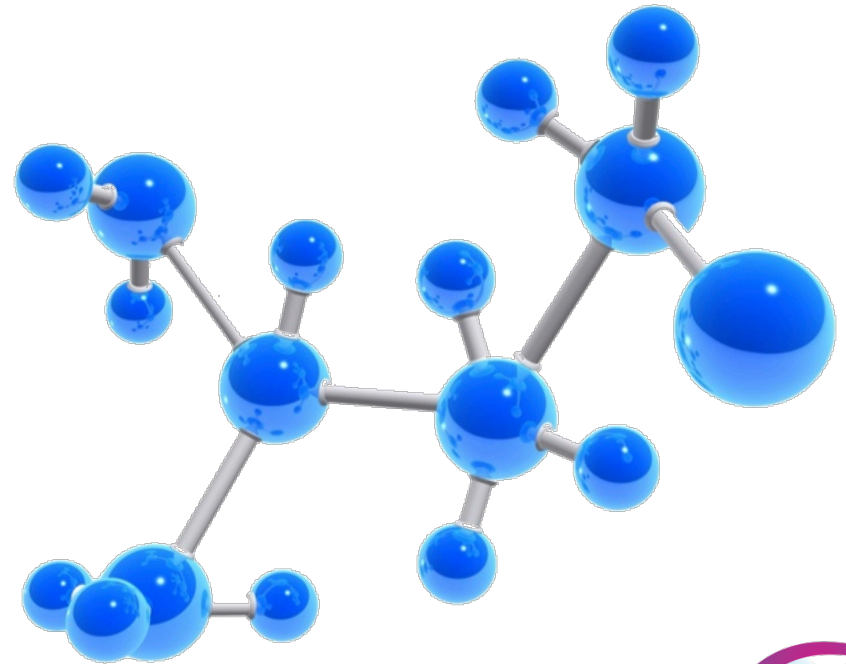
- ✓ Cooperative organization: 100 shareholders are Copalis raw material suppliers
 - ✓ 80 employees
 - ✓ Turnover: 18,000 k€
 - ✓ Created in 1960 to add value to fish by-products: production of fishmeal
- 

From fishmeal to high added-value ingredients

- ✓ Observation in the 60s: how to better use the protein resources to meet the increasing need in protein?
 - ⇒ Protein solubilization to reach protein bound to non-protein substances (lipids, carbohydrates, ...)
- ✓ Development of enzymatic hydrolysis process on an industrial scale: patented process
 - ⇒ 1968: launch of fish protein hydrolysate CPSP®
Increased nutritional value of protein from fish by-products: +15 to 35%
 - ⇒ 2000: development of a range of marine actives for the cosmetics and the dietetic markets

Benefits of the peptide form

- ✓ High bioavailability
 - *peptide* from the Greek *πεπτίδια* = “small digestible”
 - through peptide specific transport systems
- ✓ Active at low concentration
- ✓ Soluble proteins with:
 - heat stability
 - pH resistance
- ✓ Non-allergenic form of proteins



Fish, a source of active ingredients



Whole by-product



Skin



Cartilage
Fishbone



Fish muscle



Liver
Roe



Cuts & trimmings



Enzymatic hydrolysis process

CPSP®:
*soluble fish
protein
concentrate*

Collagen
Elastin

Chondroitin
sulfate
Bioavailable
Calcium

Anti-stress peptides
GI lowering peptide
Anti-hypertensive
peptides
Flavouring extract

Omega 3
DNA rich
extract

Mincing
Peeling
Deep freezing

Fishmince
Bits & pieces
Salmon head
Scrapping

Aquaculture
Petfood
Milk replacer

Nutricosmetic
Food supplements

Food supplements
Food industry

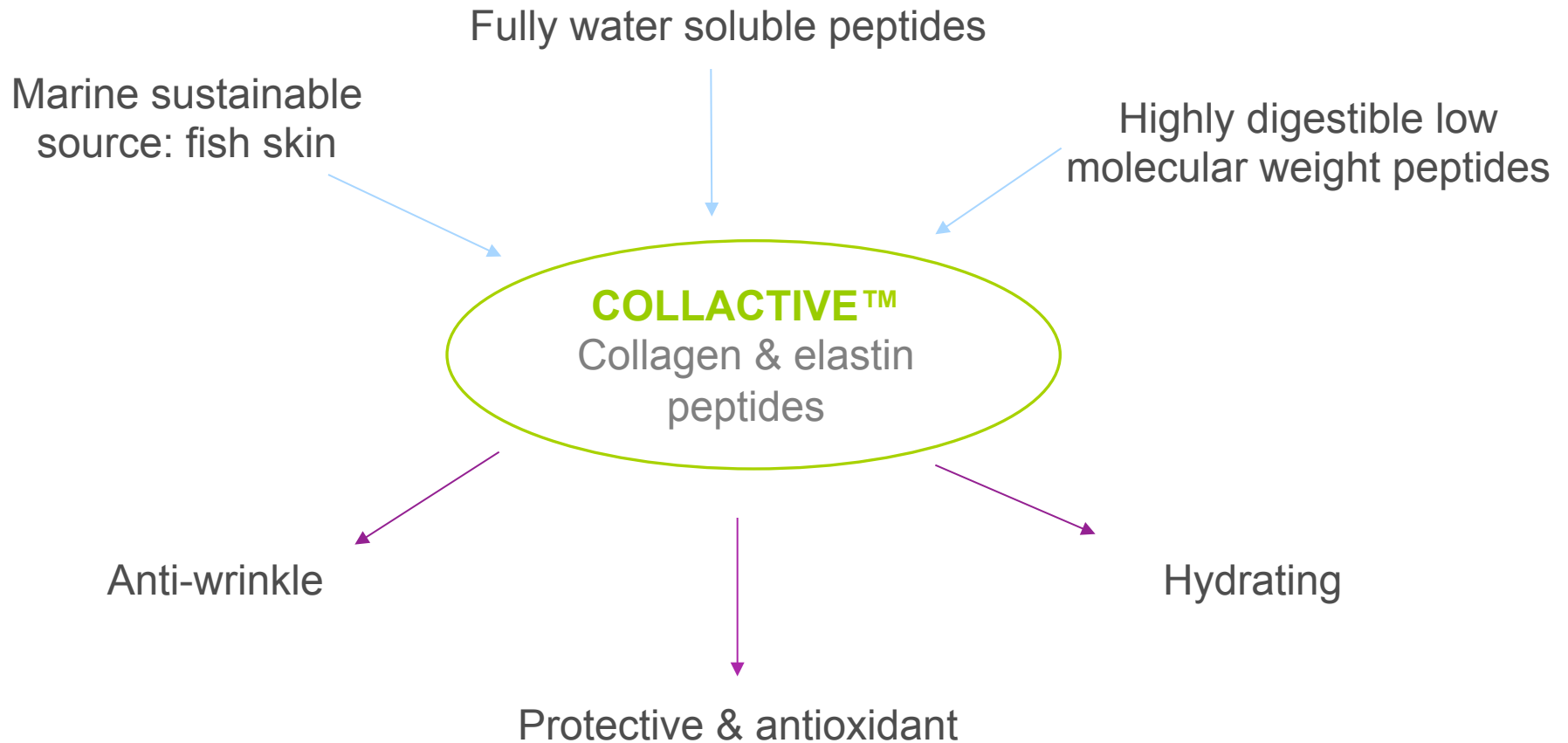
Food industry



Focus on

COLLACTIVE™

Oral cosmetic Sea Solution®





COLLECTIVE™

Anti-ageing clinical study design

- ✓ **Tested products:** COLLECTIVE™ (collagen & elastin peptides) in capsules
Placebo = maltodextrin capsules

- ✓ **Volunteers:** 43 healthy women
 - between 40 and 55 years old
 - with wrinkles on crow's-feet

- ✓ **Protocol:**
 - ingestion of 2 g/day of either COLLECTIVE™ or placebo with a glass of water
 - skin conditions were measurements at day 0, day 28 and day 84.

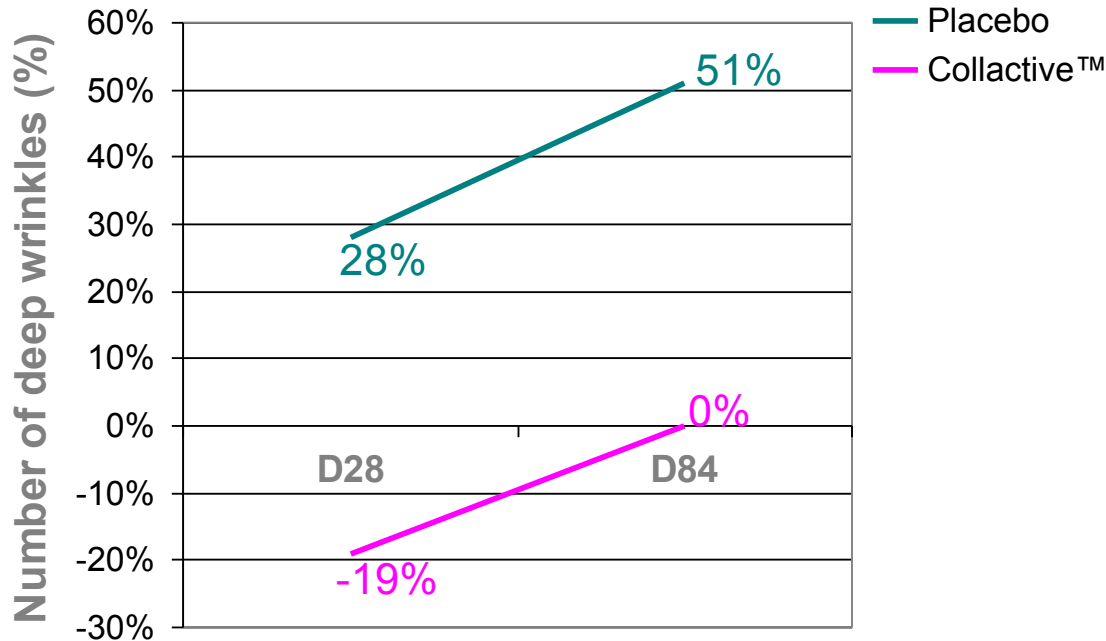
- ✓ **Measured parameters on the forearm and the face:**
 - number and depth of wrinkles with Skin Image Analyser® and with Quantirides®
 - cutaneous hydration rate with Hydrascan® and Corneometer®
 - cutaneous tolerance through clinical examination and subjective evaluation



COLLECTIVE™

Anti-ageing clinical study results

COLLECTIVE™ peptides have an anti-wrinkle effect after 28 days of treatment



⇒ D28: anti-wrinkle effect

⇒ D84: protective effect

COLLACTIVE

TM

Ideal for "Beauty from Within" food

Combines the **2 main constituents** of the extracellular matrix:

- elastin fibres give the dermis suppleness
- collagen fibres tensile strength

Properties: prevents and diminishes wrinkles
increases the moisture level of dry skin

Potential claim: helps slow the effects of ageing

Applications: Beauty food
Beauty drink
Tablets
Capsules



Copalis[®]

SEA SOLUTIONS

BEAUTÉ
BEAUTY

피부 보습과 탄력을 간편하게 먹어서 해결하자!

기전두알, 이너비아쿠아 포스 출시

야근, 과제로 매일매일이 바쁜 일상 속에서 꼼꼼하게 스킨케어를 하기란 쉽지 않다. 설사 매일 아침저녁으로 화장품을 꼼꼼하게 바른다고 해도 피부 속까지 완벽하게 케어되는 건 아니다. 이런 당신에게 꿈같은 희소식! 자기 전 두알만 챙겨 먹어도 피부 보습과 탄력을 동시에 잡아주는 '이너비아쿠아 포스'가 출시됐다!



개념 스킨케어
이너비아쿠아 포스

먹을 때마다 점점 더 푸석하고 건조하며 탄력 잃은 피부는 일이 잦아졌다면, 이제 이너비아쿠아 포스와 함께 고민을 신속 수분을 채워주는 히알루론산으로 국내 이너뷰티 열풍을 이너비가 히알루론산에 콜라겐 성분을 더해 피부 수분과 탄력을 이너비아쿠아 포스'를 새롭게 출시했다. 이너비아쿠아 포스는 당과 '히알루론산'에 피부 탄력을 잡아주는 '콜라겐'을 더해 보습과 이너주는 한층 똑똑해진 뷰티 서플리먼트이다. 밝았고 탭 탭한 라운드형의 고급스러운 유리 보틀 패키지에 담겨 프리미엄 이미지를 강화시켰다. 이너비아쿠아 포스는 C,뉴트리의 간간한 함유 일본산 100% 히알루론산 나트륨과 프랑스산 해양성 한다.





Focus on PROTIZEN

Anti-stress Sea Solution®

Marine sustainable
source: fish meat

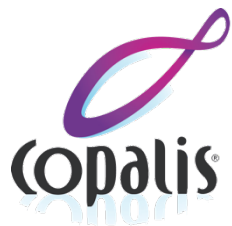
Highly digestible low
molecular weight peptides



Anxiolytic-like
Relaxing effect

Proven to be safe
No side-effect

Help fight against stress
and its symptoms



PROTIZEN

In vivo study design

Objectivated in the Conditioning Burying test against Diazepam®:

- ✓ **Tested substances:** Protizen and Diazepam® (reference)

<u>Products</u>	<u>Frequency</u>	<u>Doses (mg/kg, p.o.)</u>	<u>Vehicle</u>
Protizen a	1 treatment	a	0.5% methylcellulose solution
Protizen b		b	
Diazepam		3	

Treatment of control rats: sterilized 0.5% methylcellulose aqueouse solution at 5 ml/kg, *per os*.

- ✓ **Animals:** 48 rats male Wistar/Han rats randomly put into 4 groups (n = 12 per group).
- ✓ **Protocol:** The rat was placed in the test chamber on the side opposite a shock-probe and the first time the rat touched it, the experimenter delivered a single 2-mA shock. Immediately after shock administration, the behavior of each rat was recorded on VHS-videotapes for 5 minutes.



PROTIZEN

In vivo study design

✓ Recorded variables:

- Duration of probe-burying;
- Number of head stretchings towards the probe;
- Number of approaches towards the probe;
- Number of retreats away from the probe.

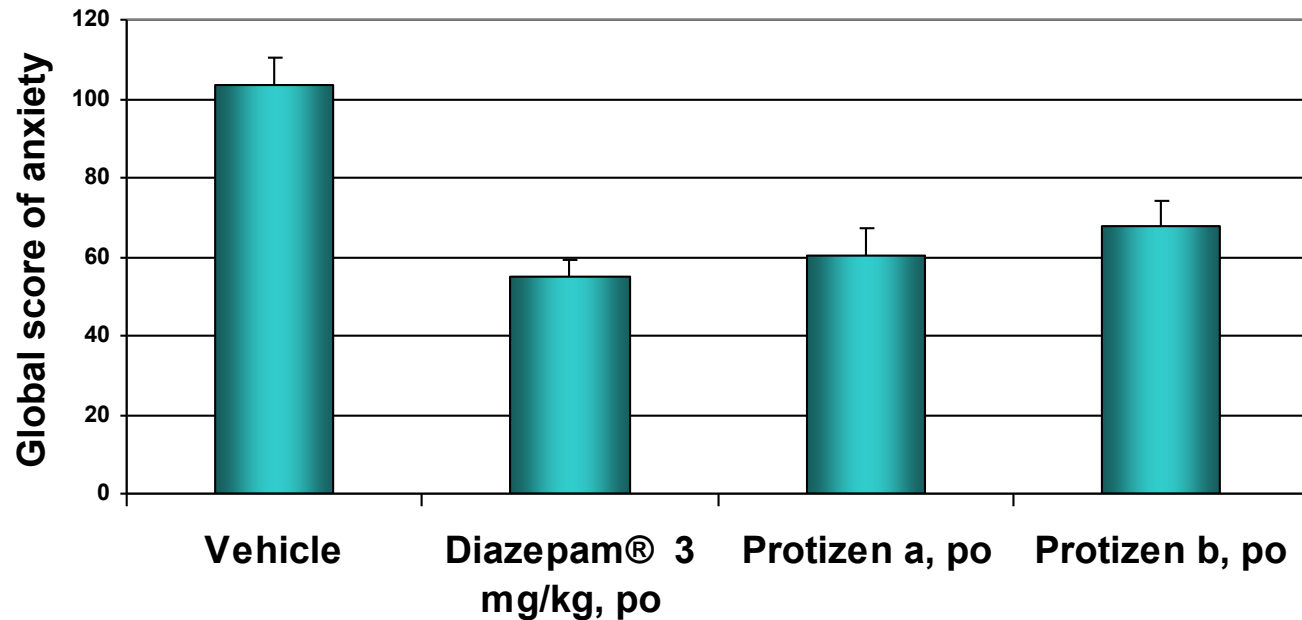
“Percentage of approaches towards the probe followed by retreats“ =
(number of retreats/number of approaches) x 100





PROTIZEN

In vivo study results

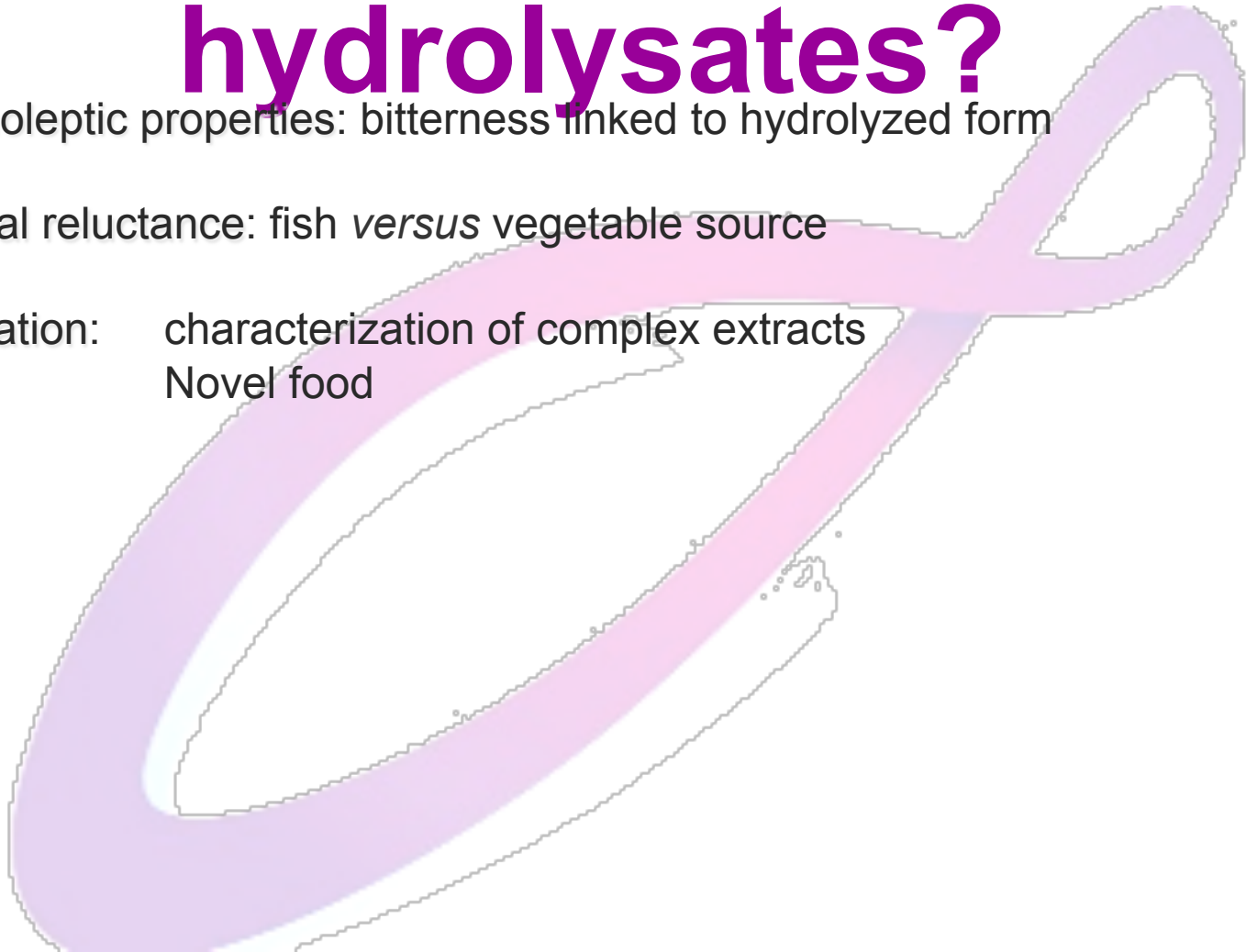


⇒ Presents a relaxing effect comparable to that of the anxiolytics

⇒ Stimulates the attention while getting well-being and relaxation (no side effect)

What are the limitations of fish protein hydrolysates?

- ✓ Organoleptic properties: bitterness linked to hydrolyzed form
- ✓ Cultural reluctance: fish *versus* vegetable source
- ✓ Regulation: characterization of complex extracts
Novel food



Thank you!

