



ELHIBIN[®] PF

Retains Youthful Skin Elasticity

Master Presentation
09-2020

Loss of Skin Elasticity is One of the Main Ageing Concerns



20's



30's



40's



50's

Many Recent Product Launches do Claim Benefits for Elastic Skin

~10% of skin care launches in 2012 claim benefits for elastic skin



..against age dependent elasticity loss..



..encourages elastin production..



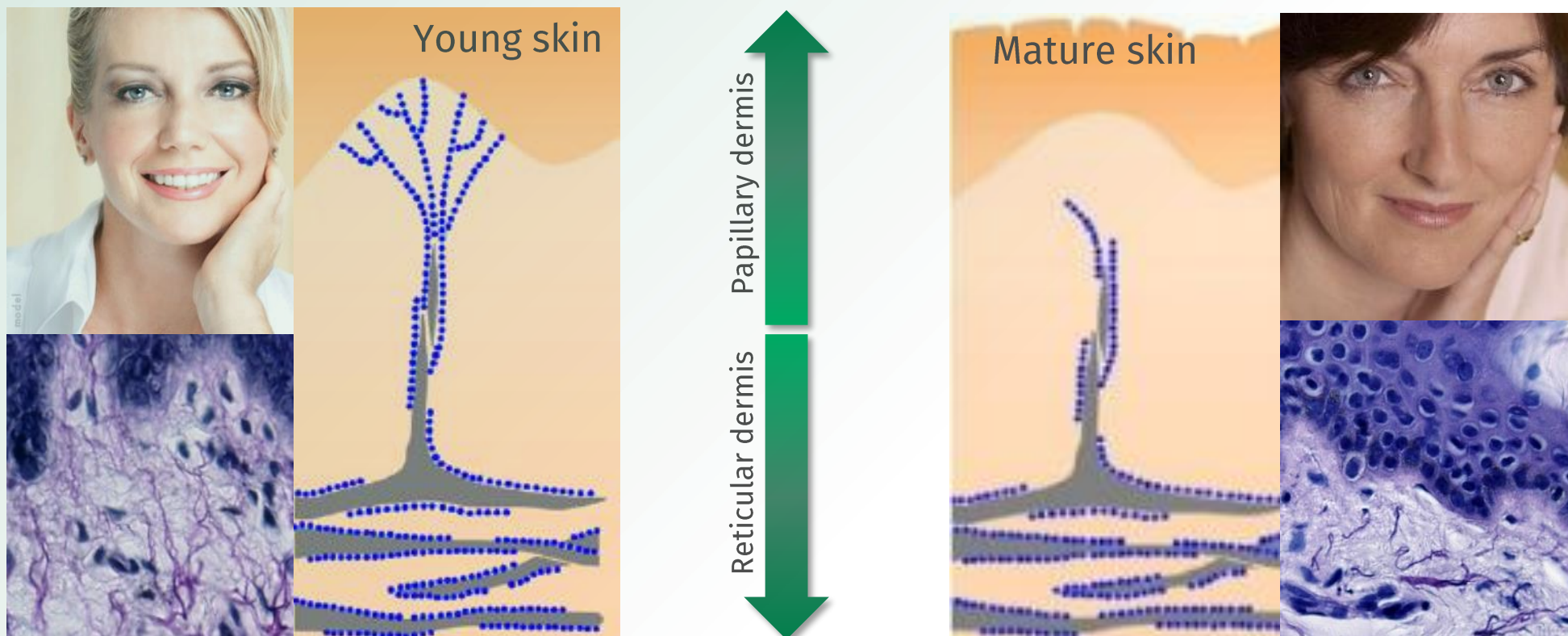
..improves skin's elasticity..

Proper Skin Elasticity Depends on Healthy Elastic Fibers in the papillary dermis

- Elastic fibers are mainly built in young age
- They are required to function for many years, during which time they are at risk of accumulating damage
- Especially exposure to UV light lead to elastic fiber breakdown
- Elastic fiber breakdown is hardly reversible and thus key reason for accelerated ageing
- Visible evidence is less elastic skin with reduced resilience, sagging and wrinkling
- Elastase, a serine protease, responsible for the elastic fiber breakdown in the papillary dermis

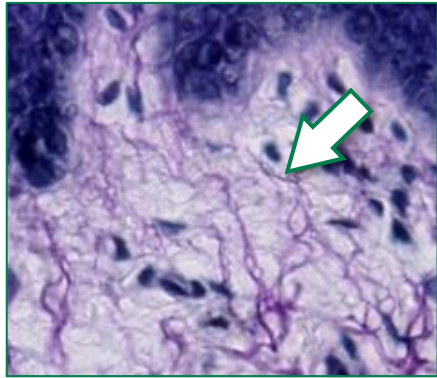
➤ **Elastase control in the papillary keeps your skin elastic**

Mainly Elastic Fibers in the Papillary Dermis are Affected

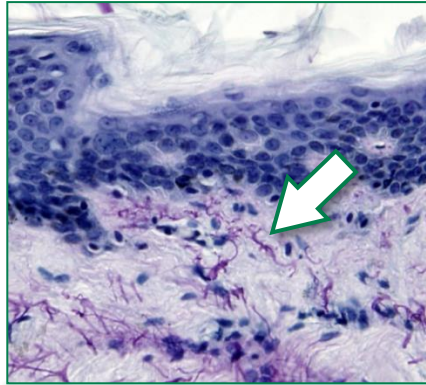


➤ Addressing the papillary dermis is key to maintain skin elasticity

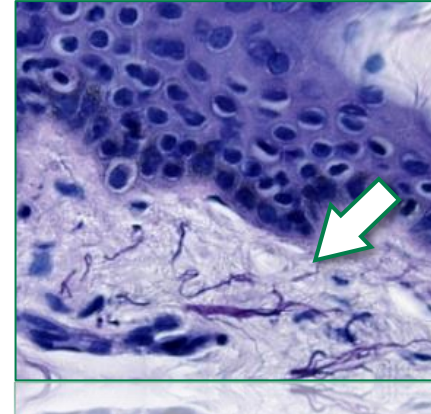
Elastic Fibers Degradation in the Papillary Dermis is a Natural Process as we Age



30's



40's



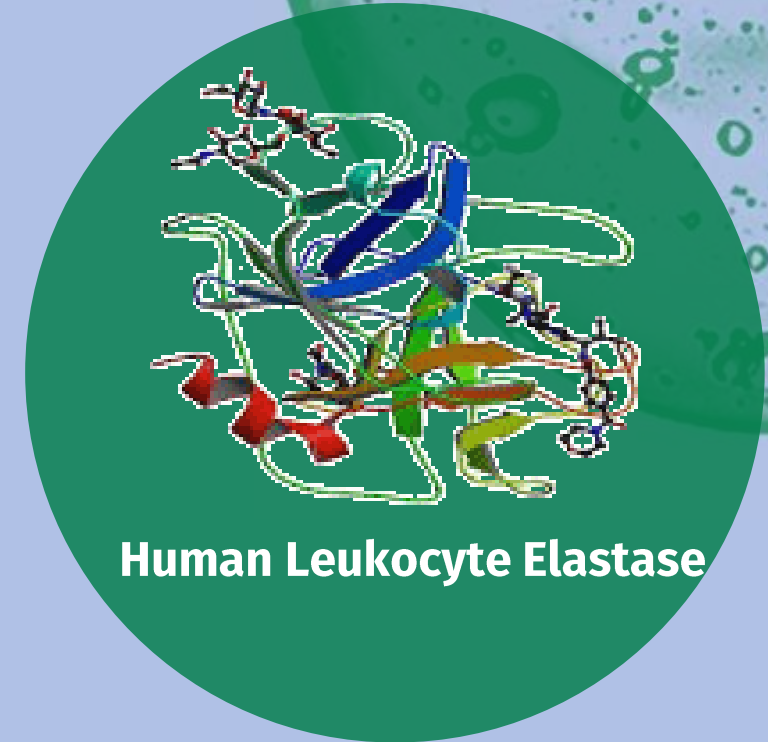
50's



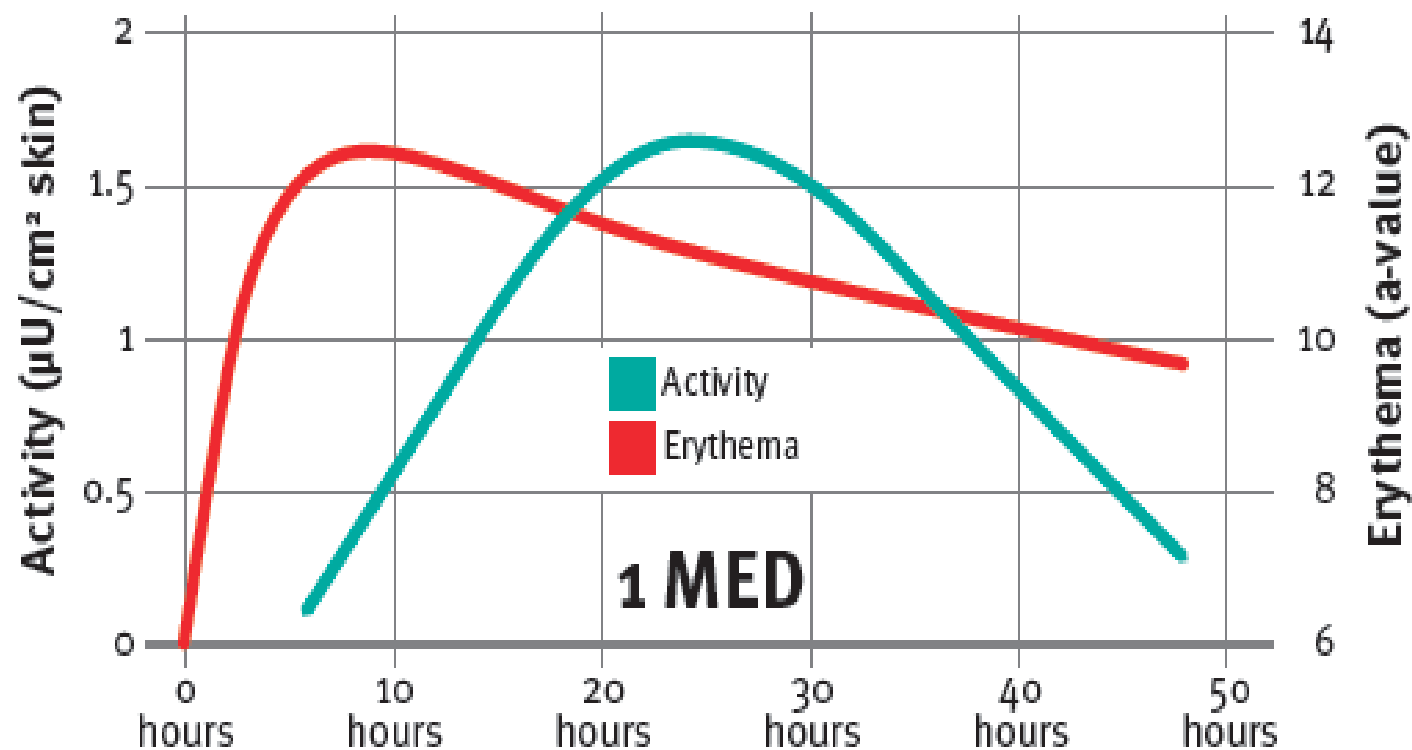
- Starting in the 40's these changes in the papillary dermis become visible

Physiological Role of Human Elastase

- Elastases are proteinases that hydrolyse proteins, in particular elastin
- They play an important role in tissue regeneration
- Different forms exist in skin:
 - leukocyte elastase
 - fibroblast elastase
- At elevated levels leukocyte elastase is one of the most harmful enzymes for the skin
- Leukocyte elastase up-regulation directly leads to elastin break down

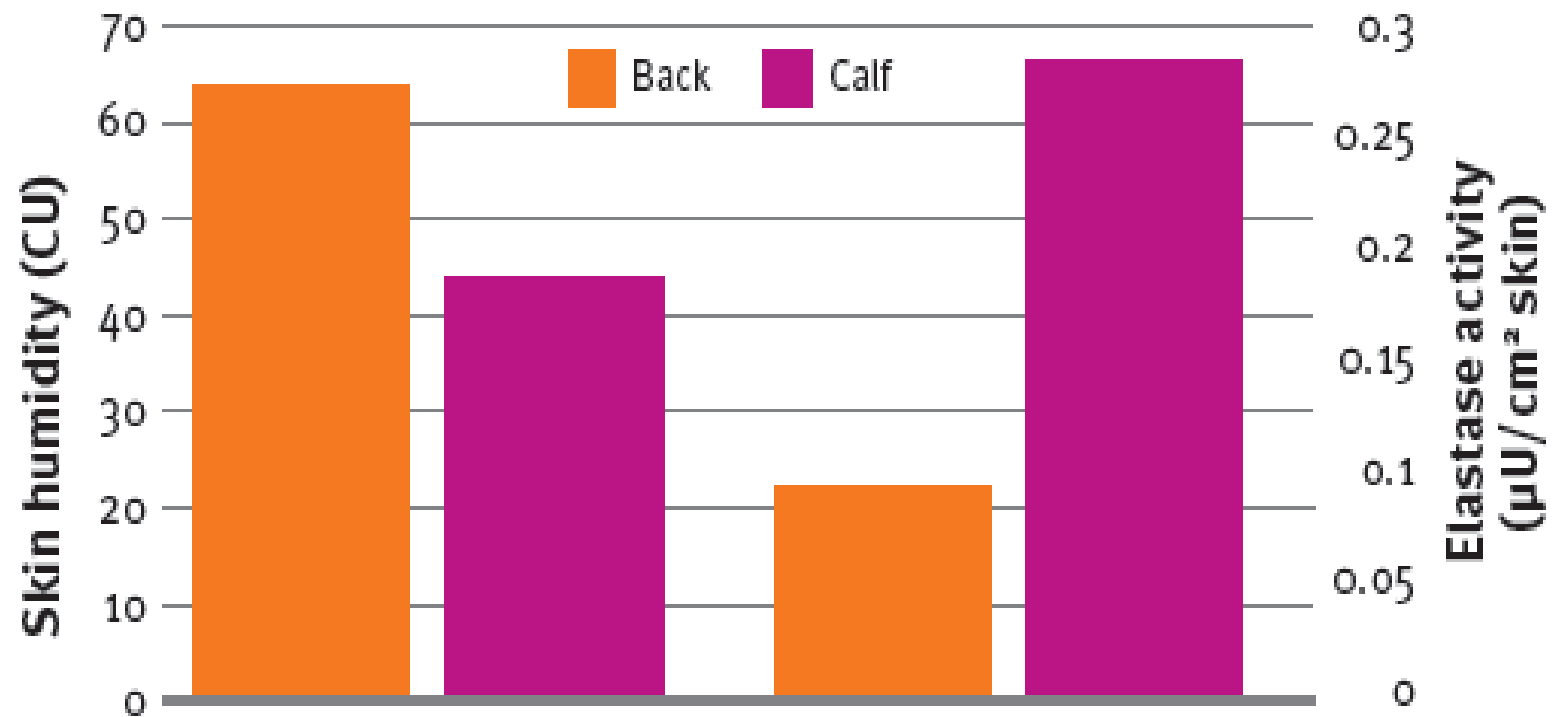


After UV Exposure Elastase Activity is Significantly Up-regulated within Hours with a Maximum after 24 Hours



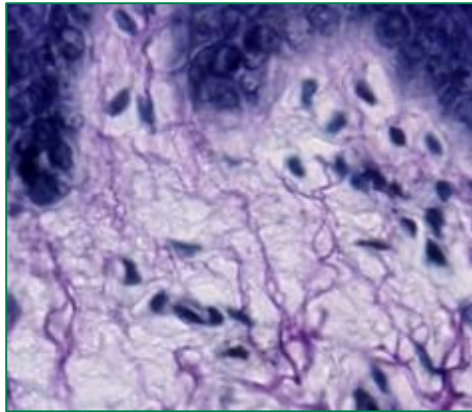
R Voegeli et al. C&T 111: 51-55, 1996

Elastase Activity in Dry Skin is Significantly Higher than in Well Moistured Skin



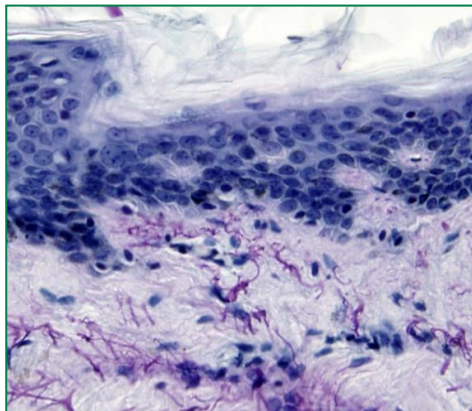
R Voegeli et al. C&T 111: 51-55, 1996

Elastase Induced Accelerated Elastic Fibers Degradation in the Papillary Dermis



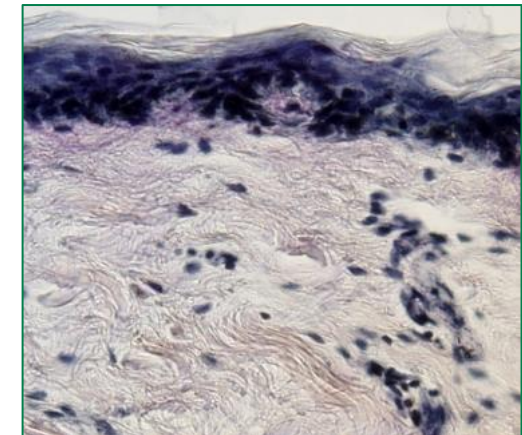
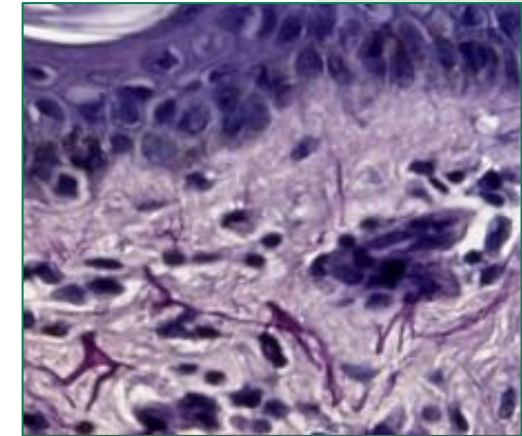
Naturally aged skin

In the 30's elastic fibers still have limited resistance to survive elastase stress.
Degradation already visible.



In the 40's this self defense capability is gone, no elastic network is visible after elastase stress.

➤ **Remaining elastic fibers**



Elastase stressed skin

ELHIBIN[®] PF
Retains
Youthful Skin
Elasticity

ELHIBIN® PF

Unique Product Features

- Has a unique double activity to protect the elastic network in the papillary dermis
 - Direct effect on elastase as an effective elastase inhibitor
 - Indirect, reduces two main causes of increased elastase activity, skin irritation and dry skin
- Carefully manufactured GMO and Isoflavone free soy derived protein complex for best performance
- Contains Bowman Birk elastase Inhibitor responsible for the activity and high levels of essential amino acids



Unique Product
Features

ELHIBIN® PF

Mode of action

UV

Stratum corneum

Epidermis

Inflammation

ELHIBIN® PF

4

Dermal
epidermal
junction

papillary

1

3

Elastic fiber

Dermis

reticular

2

Capillary

1) Inflammation (red) and cytokine ● release

2) Leukocyte ● recruitment by cytokines followed by dermal infiltration

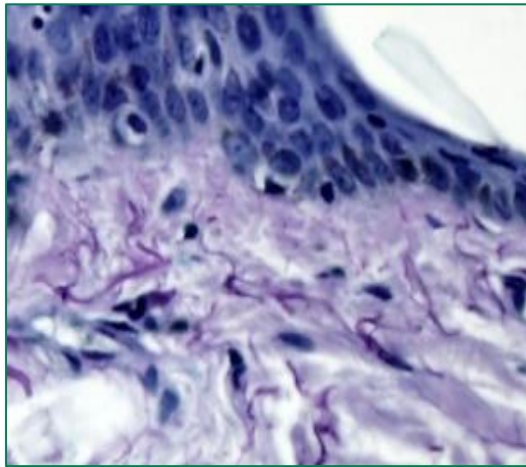
3) Elastase ● release by leukocytes and elastic fiber degradation

4) Elastic fiber protection through elastase inhibition by ELHIBIN® PF ▲

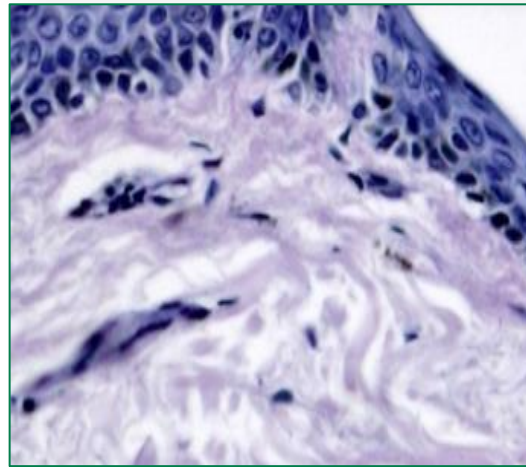
ELHIBIN® PF

Protects Skin from Accelerated Elastase Induced Ageing

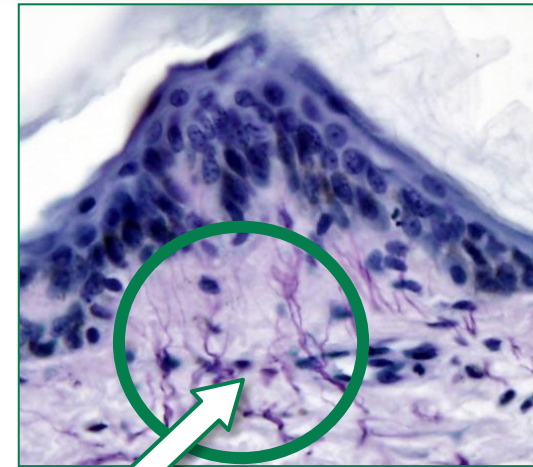
untreated



human leukocyte
elastase



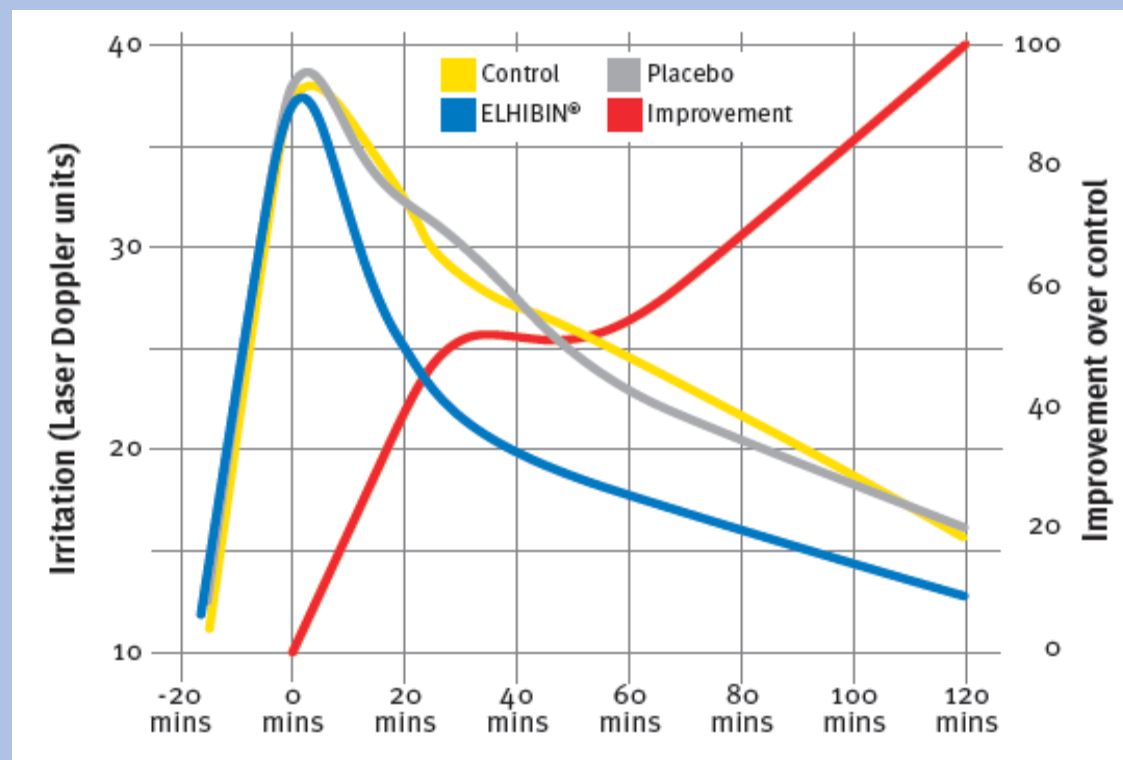
human leukocyte elastase
+ ELHIBIN®PF



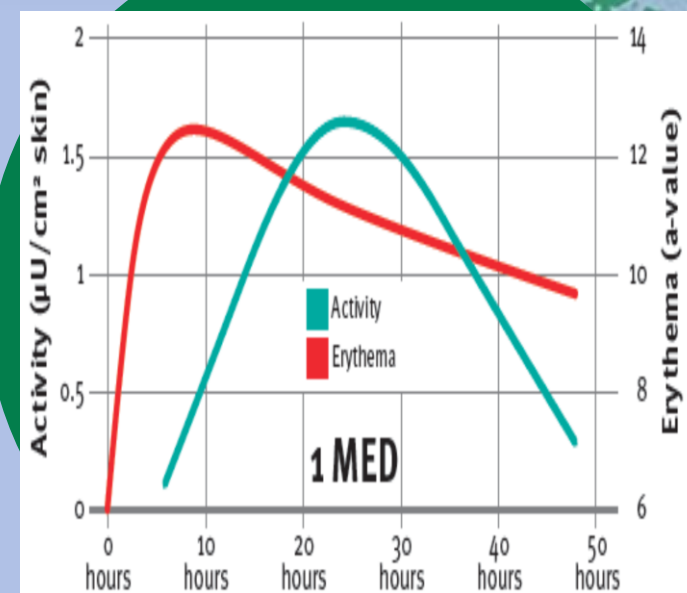
➤ Papillary dermis taken from a 43-year-old subject

**Protected elastic network
in the papillary dermis**

Anti-irritant Properties of ELHIBIN® PF

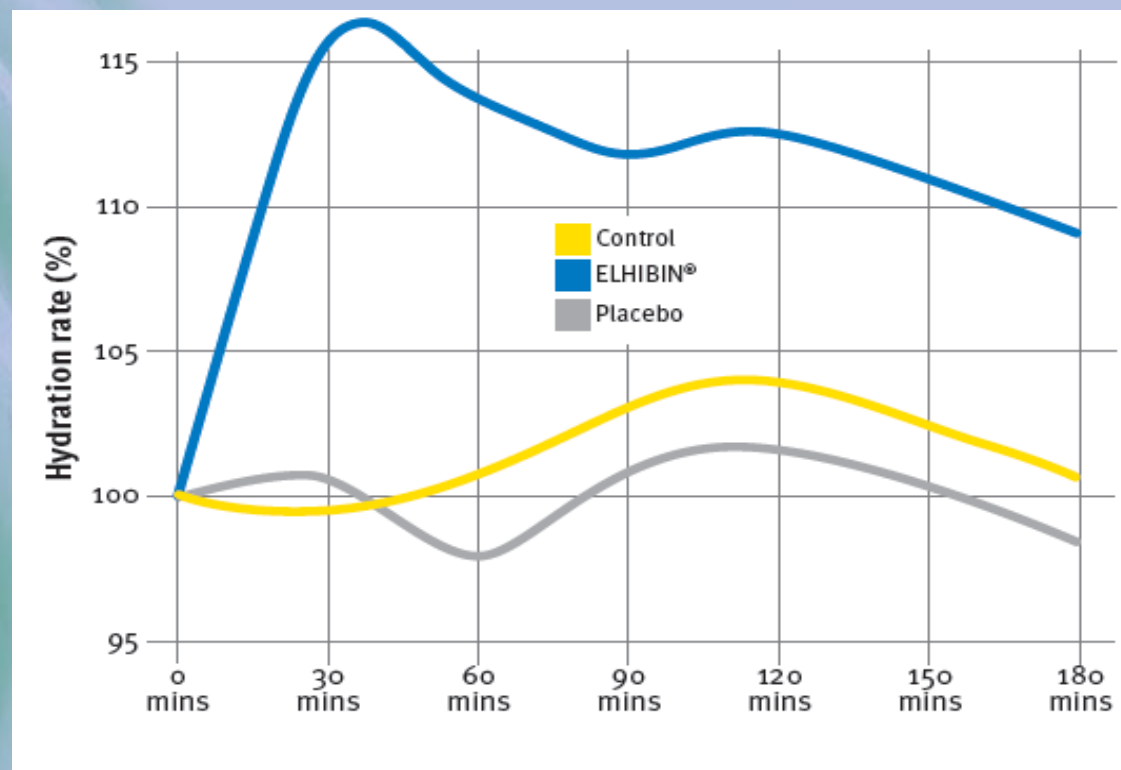


Irritated skin shows higher elastase levels

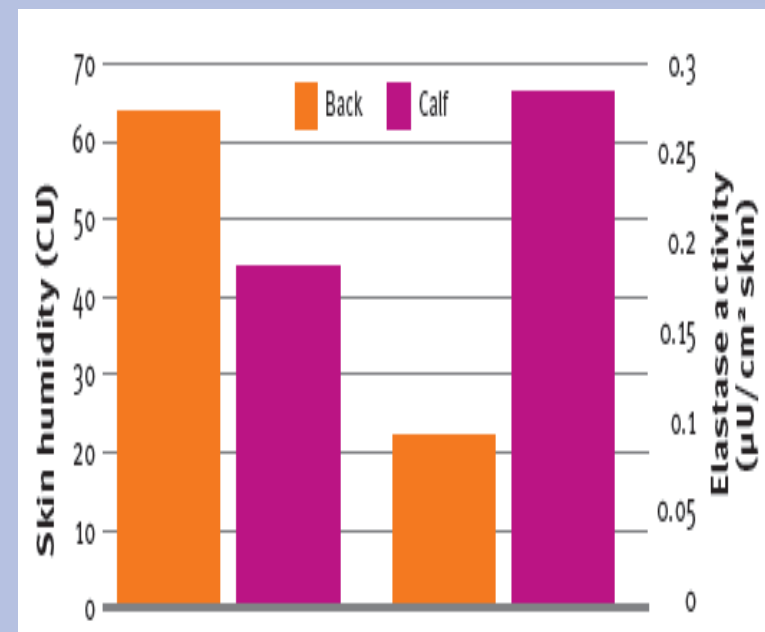


ELHIBIN® PF (5%) (blue curve) reduced the irritation compared to the placebo formulation (grey curve) by more than 50% and thus helps to keep Elastase activity low.

Moisturizing properties of ELHIBIN® PF

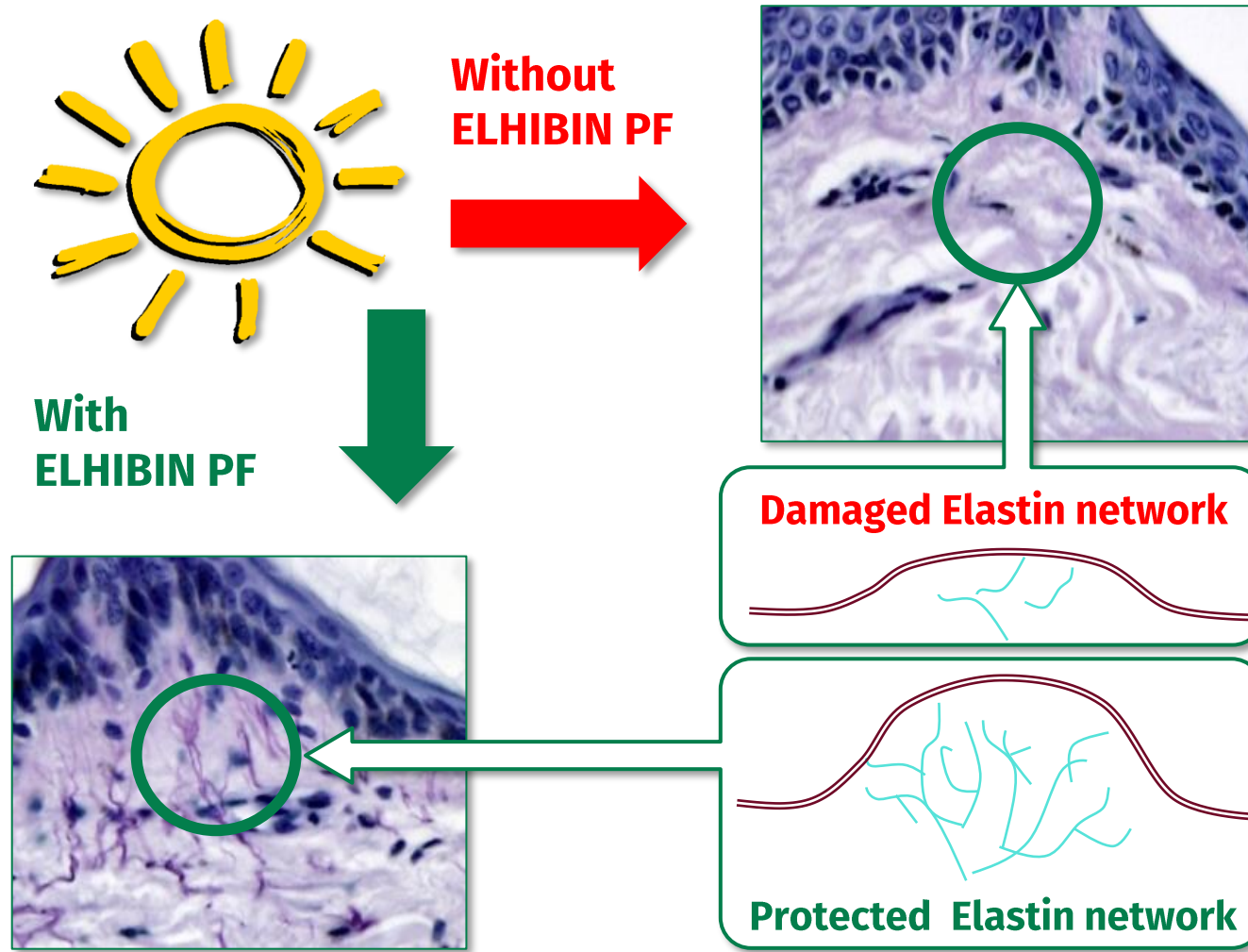


Dry skin shows higher elastase levels



Single application of 5% ELHIBIN® PF has a clear benefit to moisture the skin and thus keep Elastase activity on a low level.

ELHIBIN® PF Activity at a Glance



ELHIBIN® PF

Retains Youthful Skin Elasticity

- Helps to delay naturally occurring skin ageing
- Fights against accelerated UV induced skin ageing
- Particularly effective for skin through the 30s into the 50s
- Diminishes skin sagging and improves skin resilience
- Offers excellent anti-irritant and moisturizing properties

Key Benefits



ELHIBIN® PF

Retains Youthful Skin Elasticity

- Beauty care products that help to retain a youthful looking skin
- Beauty care products to delay the loss of skin elasticity
- Anti-ageing products claiming anti-sagging and improved resilience
- Anti-ageing protecting treatment
- Sun care products to claim an anti-ageing benefit

Cosmetic
Applications

ELHIBIN® PF

Intense Elasticity Retaining Serum

Carefully purified plant based anti-ageing complex with ELHIBIN® PF for young looking elastic and firm skin

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Pemulen TR-1	ACRYLATES/C10-30 ALKYL ACRYLATE CROSSPOLYMER	0.30	100435
	Imwitor 372 P	GLYCERYL STEARATE CITRATE	2.50	100399
	Cetiol C5	COCO-CAPRYLATE	3.00	100037
	Lipocire Na 10 Pastilles	HYDROGENATED COCO-GLYCERIDES	2.50	100413
	LexFeel 7	NEOPENTYL GLYCOL DIHEPTANOATE	2.00	100647
	Cetiol OE	DICAPRYLYL ETHER	2.00	100037
B	Preservative		q.s.	
	Glycerin 99.5%	GLYCERIN	2.00	100654
	WATER DEM.	AQUA	81.40	
C	Natriumhydroxid 30% Lösung	SODIUM HYDROXIDE	0.50	
D	ELHIBIN® PF	GLYCINE SOJA PROTEIN	3.00	100288

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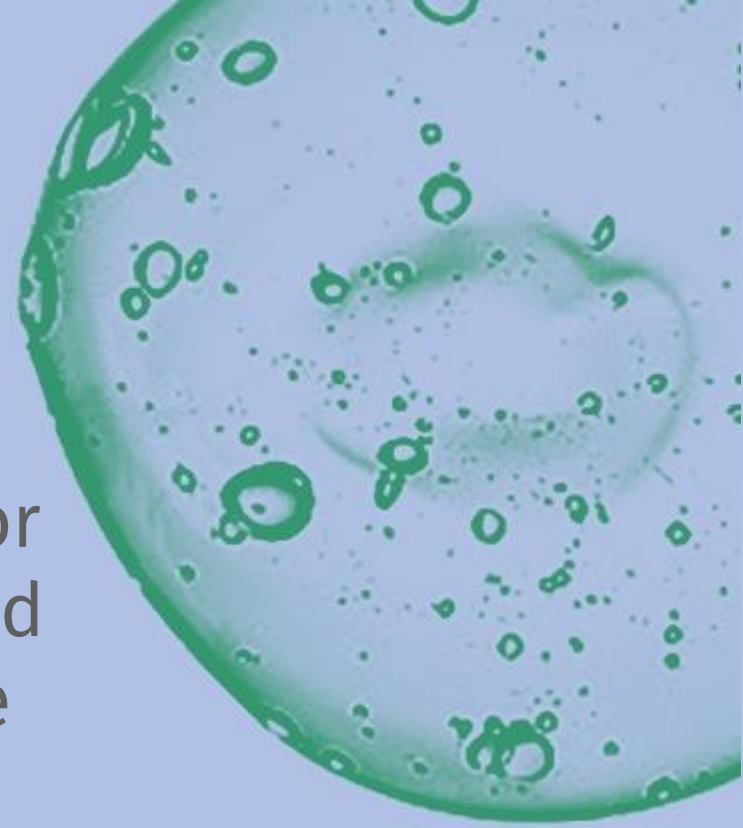


**Back up
ELHIBIN[®] PF**

Soy remains trendy

“There can be no doubt that the soybean is one of the most promising of all agricultural plants for an almost unlimited variety of industrial uses, and that it is going to play an outstanding role in the future economic life of this country.”

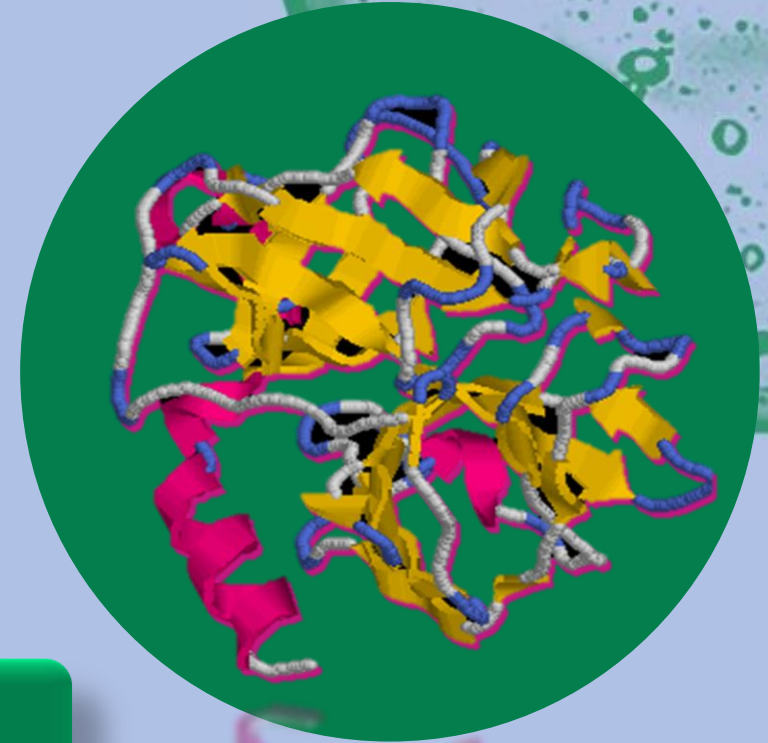
Henry Ford



Physiological functions of proteinases

- Protein digestion
- Inflammation
- Immune response
- Wound healing
- Maturation of hormones
- Hemostasis

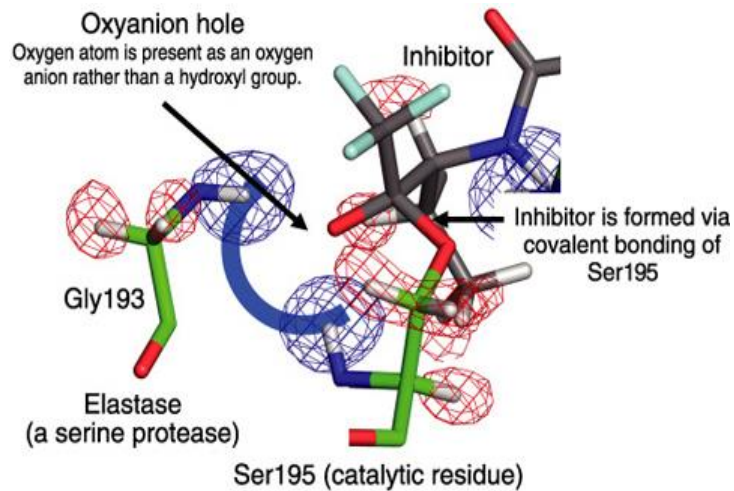
These processes are controlled and regulated by proteinase inhibitors.



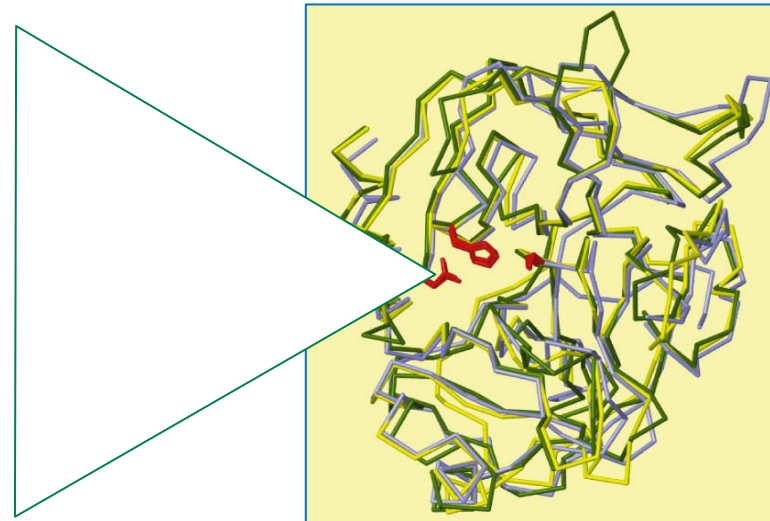
Proteinase

Proteinase Inhibitor Interaction

- Uncontrolled proteolytic reactions represent a danger for the skin
- Proteinase activity is carefully regulated by specific inhibitors
- Proteinase inhibitors fit to the active center of proteinases
- The complete masking of the active center blocks the proteinase activity
- Proteinase-proteinase inhibition balance is an important factor in skin homeostasis



Active center of Elastase



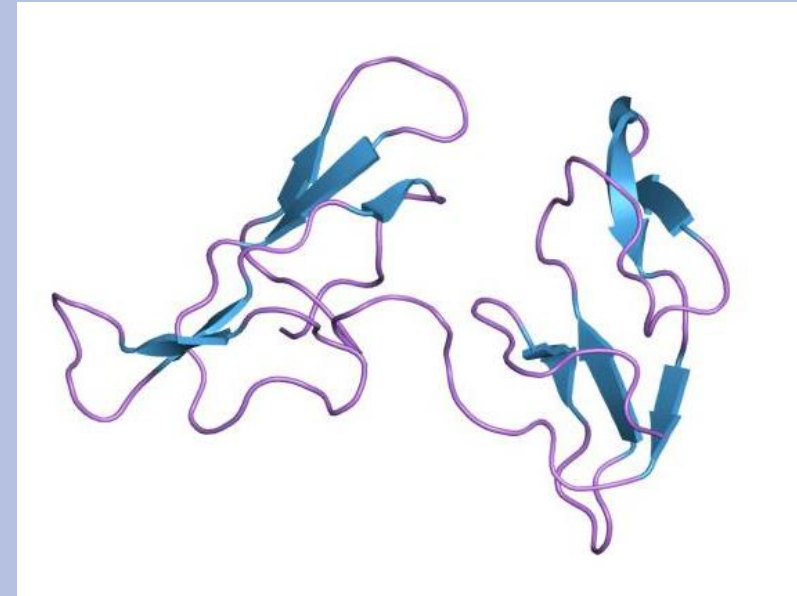
Tamada, T. et al., Combined High-Resolution Neutron and X-ray Analysis of Inhibited Elastase Confirms the Active-Site Oxyanion Hole but Rules against a Low-Barrier Hydrogen Bond, *Journal of the American Chemical Society*, vol.131, no.31, 2009, p.11033-11040.

Bowman–Birk Inhibitor

A Plant Derived Elastase Inhibitor

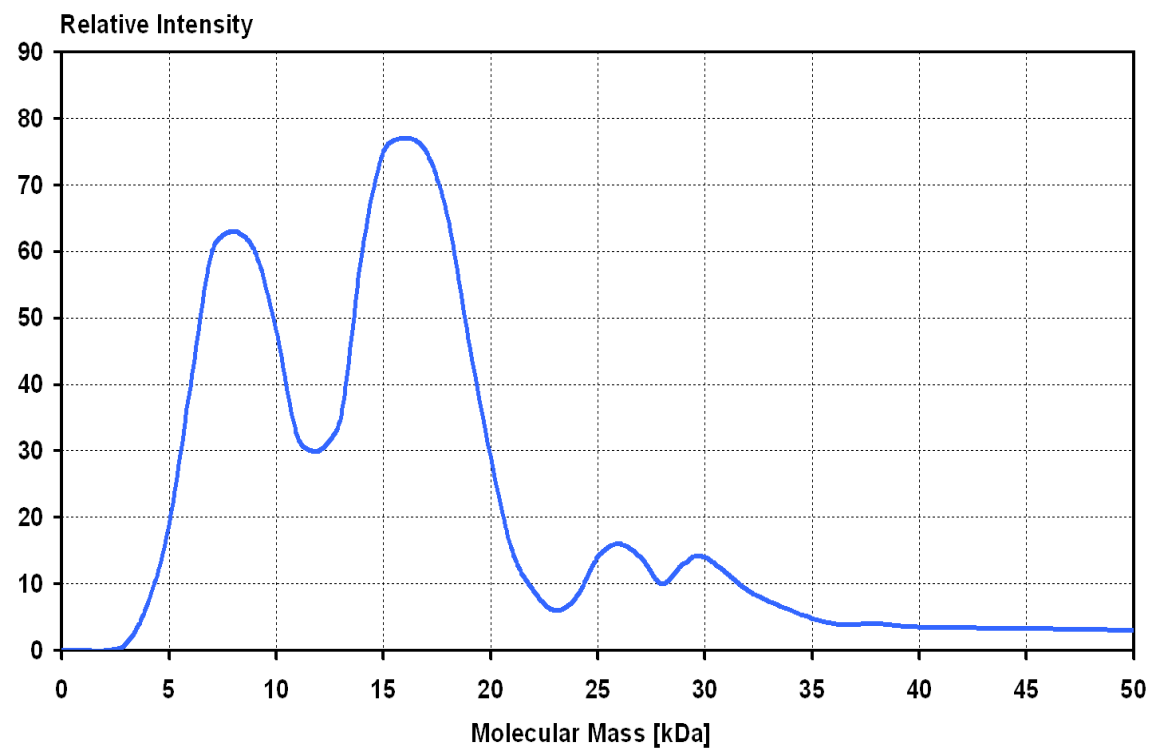
- These inhibitors are primarily found in plants and in particular in the seeds of legumes
- Proteins of the Bowman–Birk inhibitor family work as serine proteinase inhibitors

High resolution structure of Bowman-Birk protease inhibitor



(Source: Wikipedia)

Molecular Mass Distribution of ELHIBIN® PF



Two peaks at 8000 and 16000 D

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