

L-ascorbic acid vs ascorbyl tetraisopalmitate in skin ageing

– study of efficacy

Katarzyna Równy
Scientific Specialist

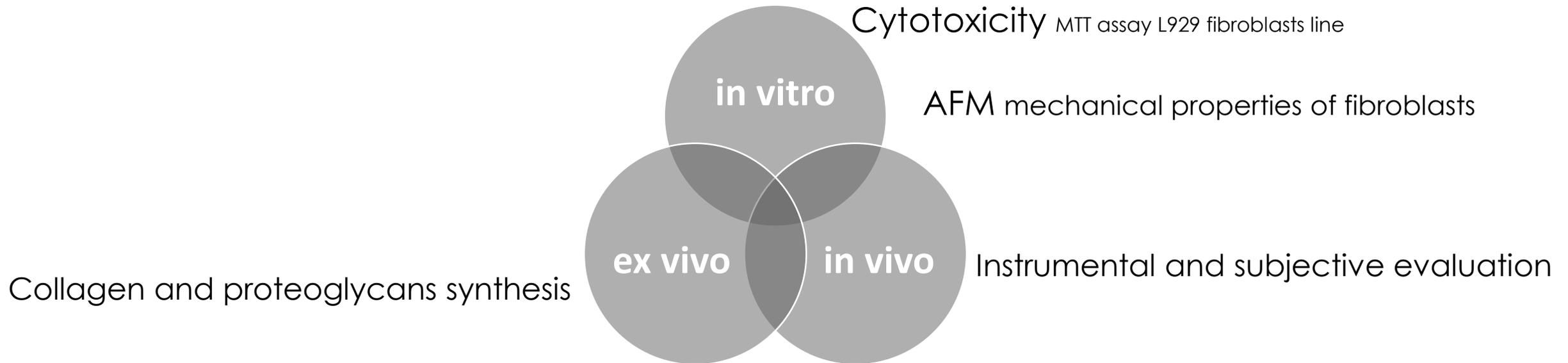
Dr Irena Eris

CENTRE FOR SCIENCE AND RESEARCH

Vitamin C

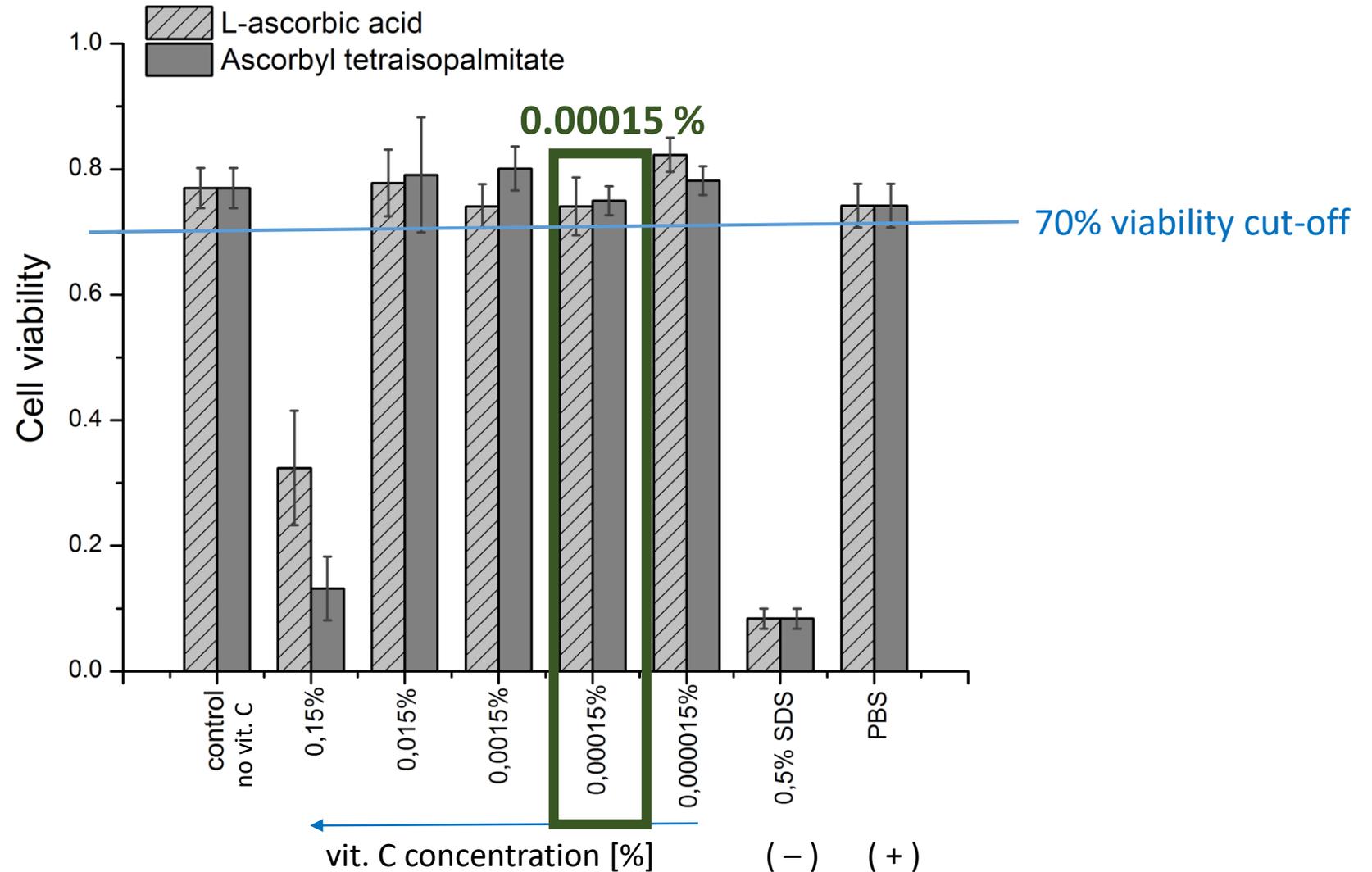
water-soluble pure L-ascorbic acid (LAA)

oil-soluble ascorbyl tetraisoalmitate



in vitro

Cytotoxicity MTT assay L929 fibroblasts line

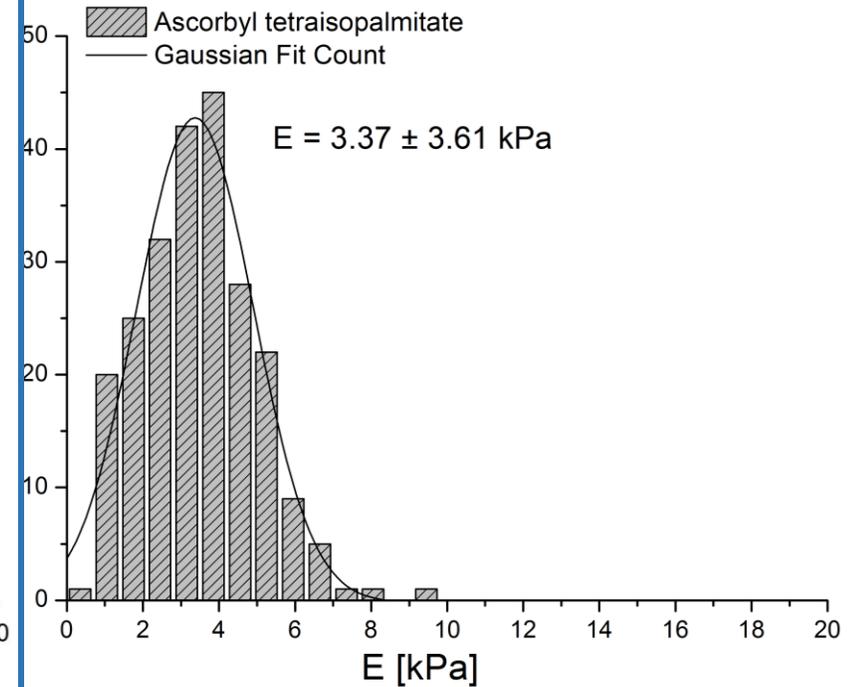
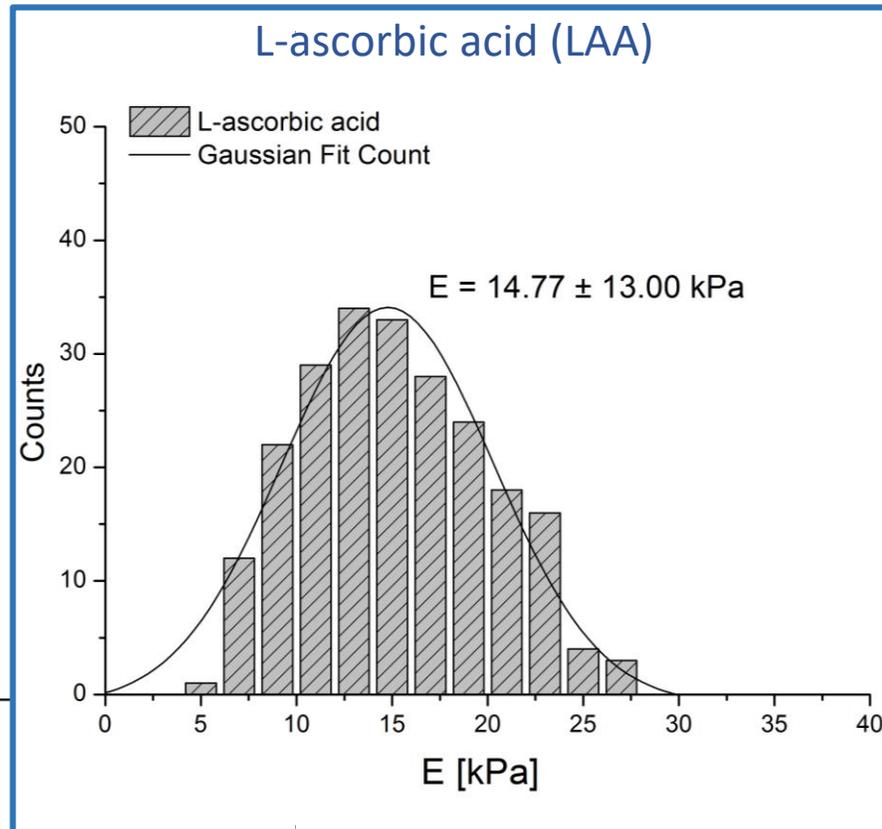
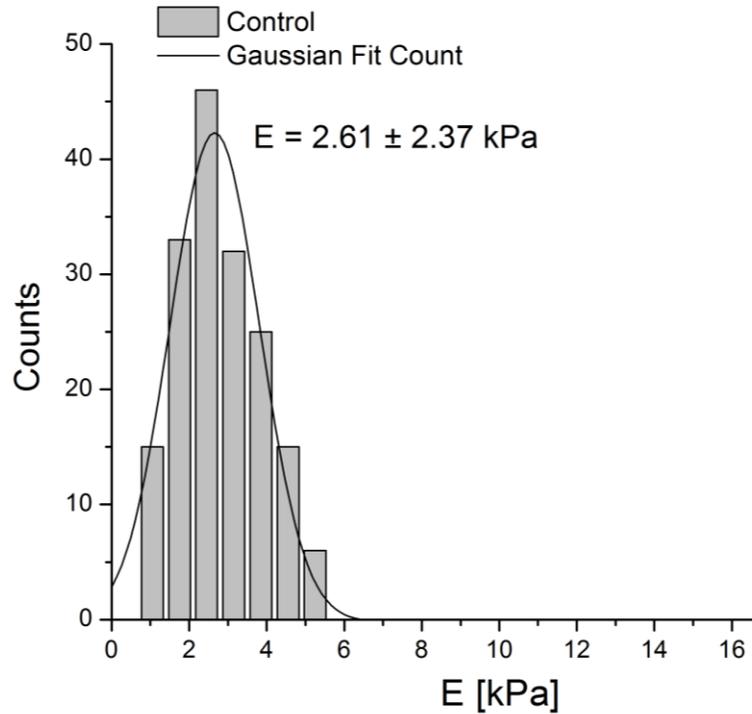


in vitro

mechanical properties of primary fibroblasts

Atomic Force Microscopy – Young's modulus \rightarrow firmness of cells

primary fibroblasts from 43 year old donor

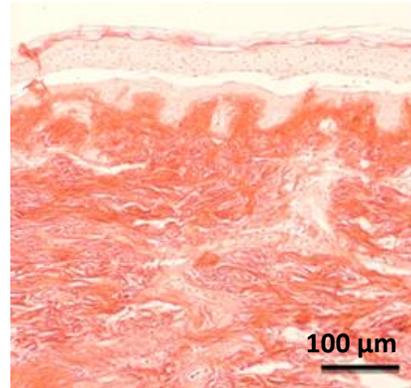


Collagen and proteoglycans synthesis skin explant

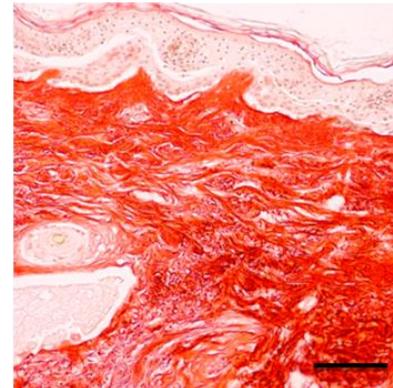
ex vivo

Sirius red staining
all types of collagen

Control

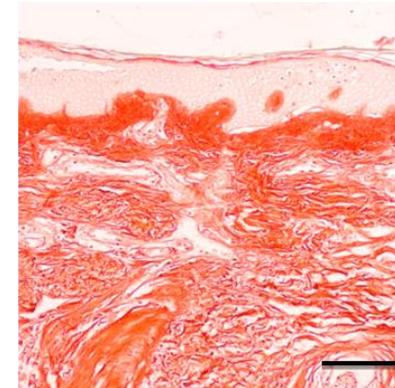


2% L-ascorbic acid



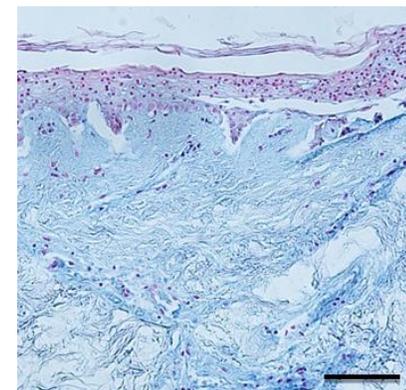
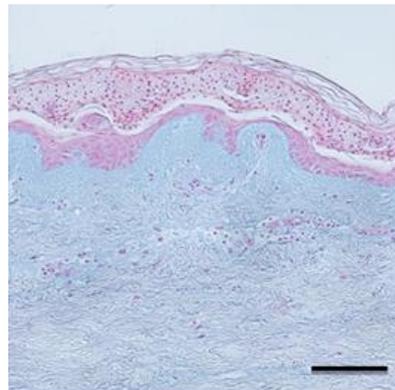
++++

2% ascorbic tetraisopalmitate

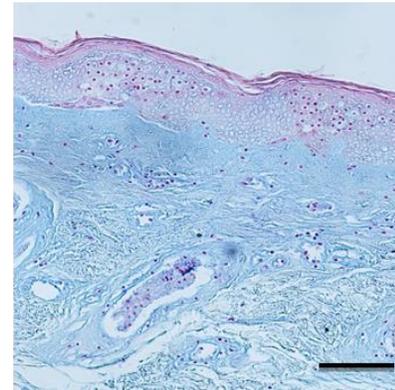


++

Alcian blue staining
all types of GlycosAminoGlycans



++++



++

in vivo

Biometric measurements

after 1 week application of **fresh** 5% LAA solution

Skin hydration	+ 24% increase in 67% volunteers
Skin redness	- 9% of erythema in 79% volunteers
	- 26% of red spots in 64% volunteers
	- 13% of redness visibility in 57% volunteers
Anti-aging	+ 54% general improvement in 57% volunteers
	- 26% of skin roughness in 64% volunteers
	+ 19% of skin elasticity in 62% volunteers
	- 33% number of wrinkles in 71% volunteers (Visioscan)
	- 26% number of wrinkles in 64% volunteers (VISIA)
	- 41% volume of wrinkles in 64% volunteers

	% volunteers
Skin is smoother	60%
Skin is firmer	87%

Vitamin C

water-soluble pure L-ascorbic acid (LAA)

oil-soluble ascorbyl tetraisoalmitate

Both forms of vitamin C are non-toxic for the cells in most of studied concentrations.

The incubation of primary fibroblasts with LAA caused higher increase in cell firmness (highest Young modulus).

LAA had stronger effect on collagen and proteoglycans synthesis than oil-soluble form.

Freshly dissolved LAA had very good tolerance and high efficacy in vivo.