

# DC Antiglycagen

## Protecting skin against sugar related aging (Glycation)

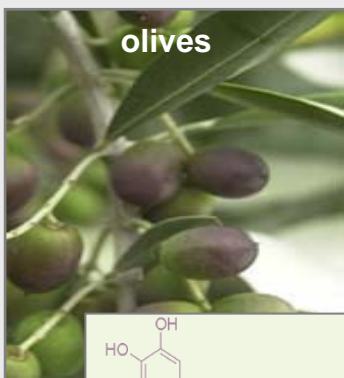
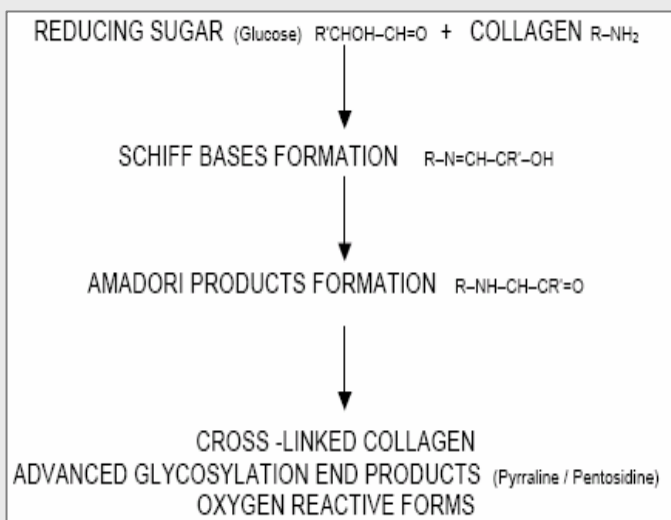
### ABOUT GLYCATION

As a person ages, his or her collagen and elastin molecules become progressively oriented parallel to each other, very much as though they were crystallizing. The older one becomes, the more these molecular fibers become welded together, side-by-side, as a result of oxidation-induced cross-linkage. Thus the skin of old people becomes inelastic, deformed, wrinkled, and leathery. If we could find a way to prevent *excessive* cross-linking of just these two molecules (*some* cross-linking is necessary, unless one is a jellyfish!), we could eliminate almost entirely the cosmetic debilities of old age.

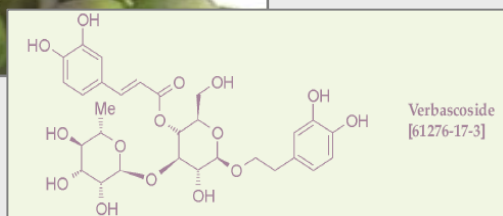
Glycation as described by, Former professor of biology and geology, **Frank R. Zindler** is now a science writer. He is a member of the American Association for the Advancement of Science, the New York Academy of Sciences.

### PROCESS OF GLYCATION

**Glycation** (sometimes called non-enzymatic glycosylation) is the result of a sugar molecule, such as fructose or glucose, bonding to a protein or lipid molecule without the controlling action of an enzyme. The result is collagen cross-linking leading to loss of elasticity and function. Followed by a release of Advanced Glycation End products (AGEs). AGEs can be classified as free radicals and oxidizers. These can produce further damage, contributing to aging and diabetes related chronic inflammatory conditions. Inhibiting glycation is essential to any anti-aging skin care program.



olives



### DC ANTIGLYCAGEN

- Capable of inhibiting glycation by 39% to help protect youthful collagen and elastin from damage of reactive sugars and AGEs.
- Rich in verbascoside an ultra powerful antioxidant found in olive extract.
- Buffered with trace phyto minerals for maximum support against glycation.
- Recommended for skin care gels, creams and lotions.

# DC Antiglycagen

Protecting skin against sugar related aging (Glycation)

## TESTING GLYCATION

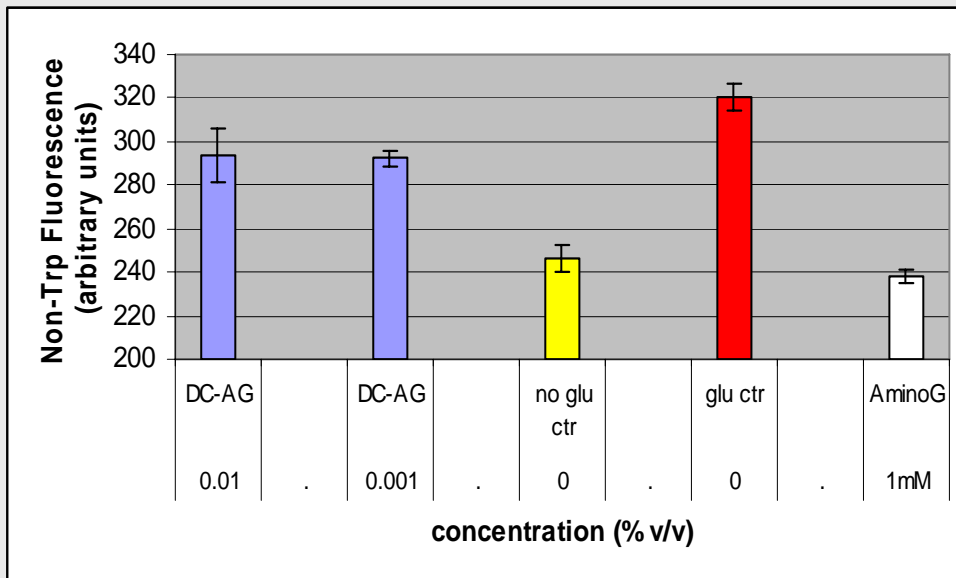
### Objective

The Maillard Reaction (non enzymatic glycation) is a chain of reactions resulting in crosslinkage of amine groups on macromolecules such as extracellular matrix proteins in the skin, with carbonyl groups on reducing sugars. These cross-linked macromolecules are called Advanced Glycation Endproducts (AGEs). The formation of AGEs is enhanced by free radicals. It is a marker of physiopathologies such as diabetes and atherosclerosis, and is associated with skin aging and photo-aging processes (van Boekel et al., 1991). The objective of this project was to test the effect of DC Antiglycagen (DC-AG) on protein glycation in the albumin/glucose model system.

### Methods

Each reaction mixture contains 10mg/ml albumin (Sigma) in PBS with 500mM glucose (Sigma G8270) in PBS. *Negative control* is 10mg/ml albumin without glucose. *Positive control* is 10mg/ml albumin with 500mM glucose and 1mM aminoguanidine hydrochloride (Sigma 396494)

Samples are incubated with the reaction mixture for 10 days at 37°C in 5% CO<sub>2</sub> atmosphere after what protein glycation is detected by measuring the increase of non-tryptophan fluorescence (excitation at 360nm) using microplate fluorometer Cytofluor 2350 (Millipore), according to Argirova and Argirov, 2003 with modifications.



Glycation-derived albumin fluorescence. Serum albumin was incubated with glucose and challenged with test materials as specified on the graph. Error bars represent standard error of the mean (SEM).

**DC Antiglycagen inhibits glycation by 39%.**

### Results and Discussion

As showed on the figure above, aminoguanidine (the positive control) totally blocked the glycation reaction, which demonstrates the technical success of the experiment. DC Antiglycagen inhibited protein glycation by 39%. This activity is remarkable considering the low concentration range of DC Antiglycagen . It is however important to consider the loss of activity on penetration in vivo and therefore it is recommended that, a concentration multiple of 100 be used in the finished product. Recommended use level in formulation is 1%.