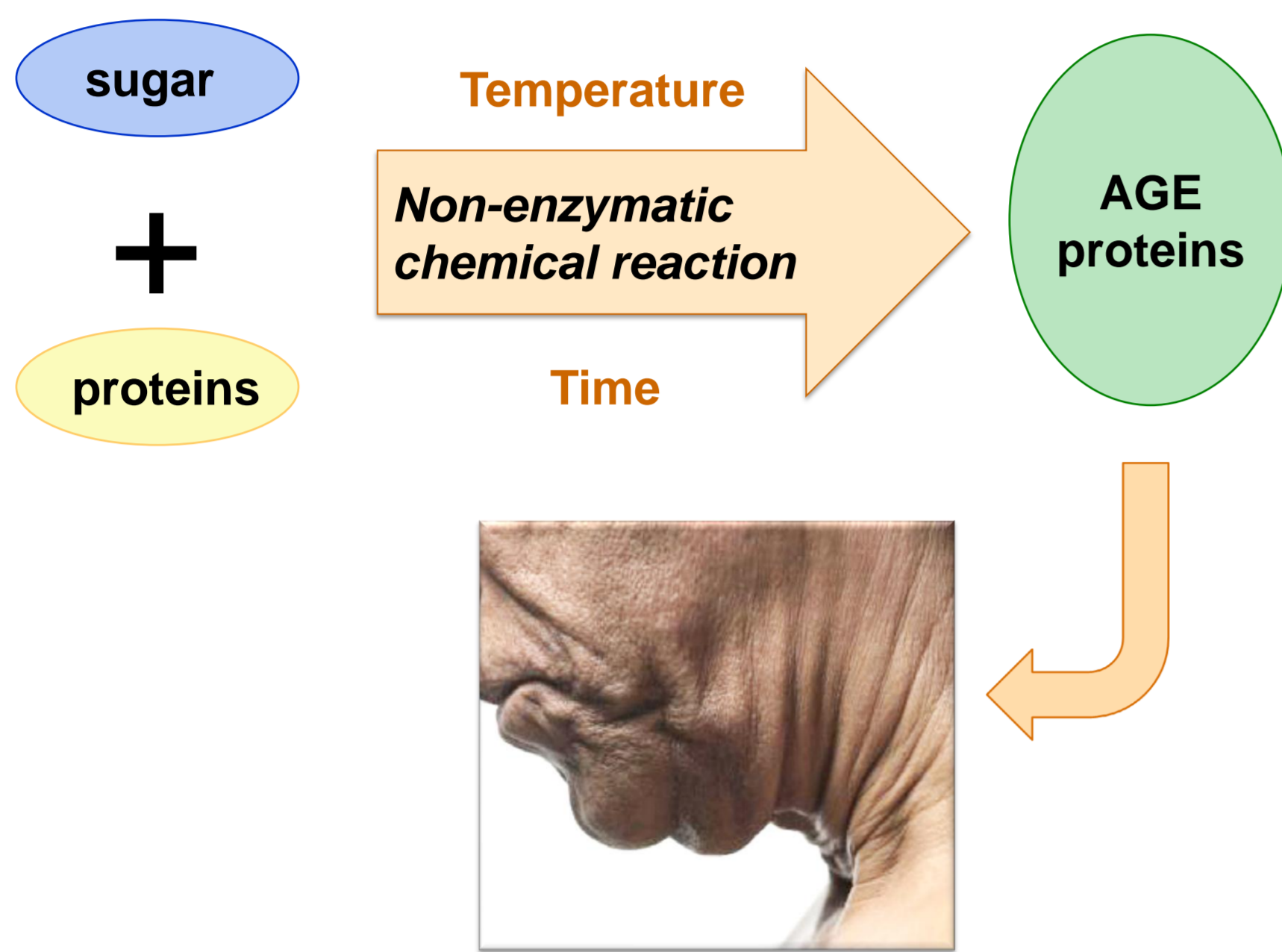


Plant extracts to overcome negative effects of glycation in human skin

Project Number: 10837.1
Main Applicant: ZHAW, Prof. Dr. Ursula Graf-Hausner
Main industrial Partner: Mibelle Biochemistry, Dr. Daniel Schmid
Start: 01.12.2009 Duration: 26 months

Project goal

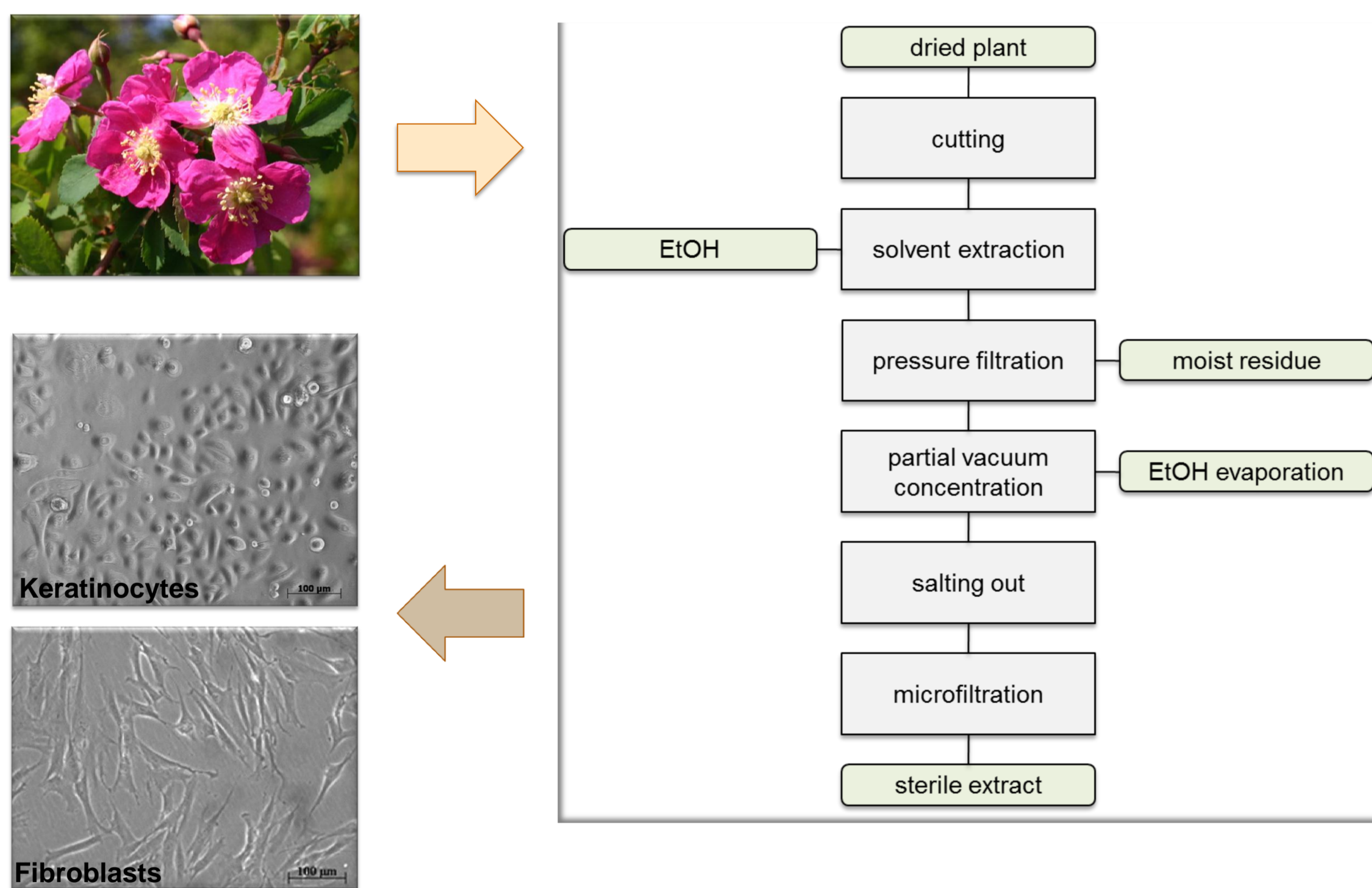


Glycation is a non-enzymatic chemical reaction which takes place when sugar molecules become attached to proteins, resulting in the formation of so called advanced glycated end-products (AGE). In diabetic patients concentration of AGE products is high due to increased sugar concentrations in the blood. In human skin, for example, glycation of collagen in the dermis leads to cross-linking of collagen fibers and loss of skin elasticity. Thanks to a broad mixture of active principles, plant extracts may have a big anti-glycation potential. The present project aims at:

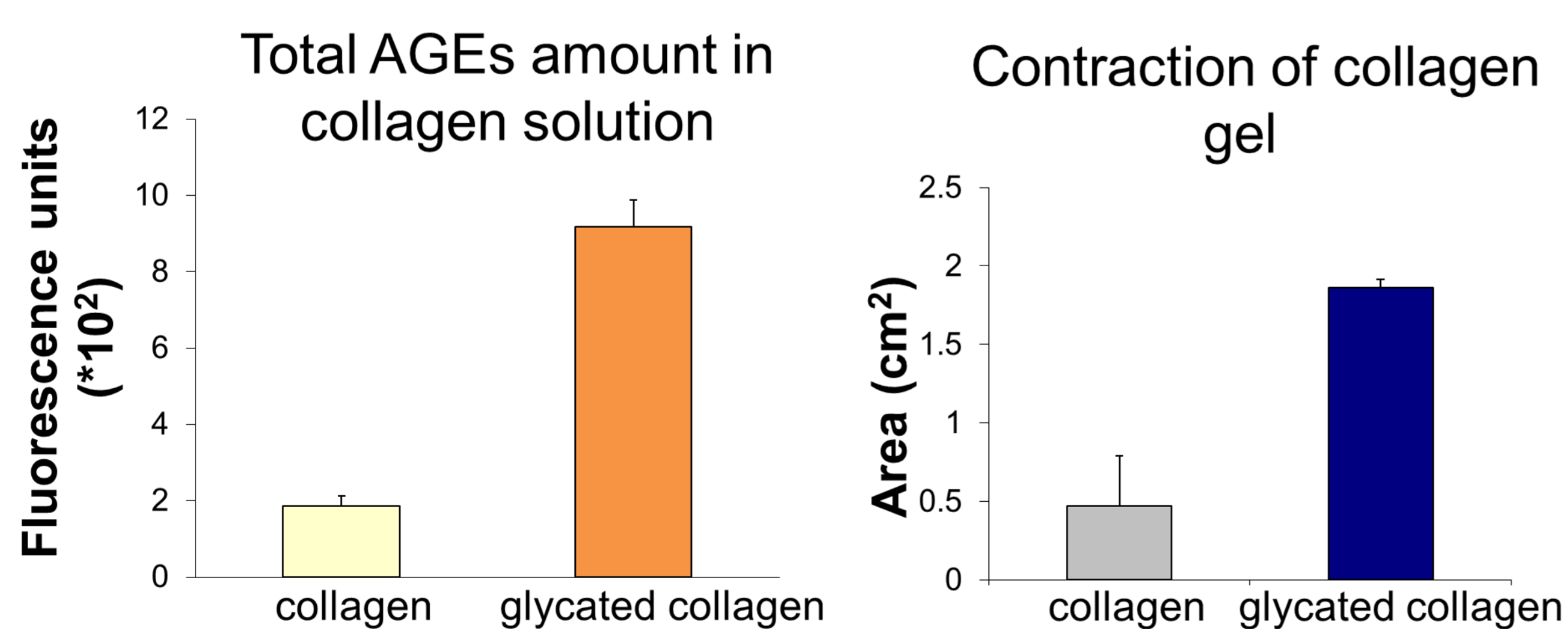
- The analysis of AGE products effect on cellular signal transduction pathways
- The development of a cosmetic product based on plant extracts which, unlike current anti-AGE products with anti-oxidative properties, acts on cellular responses (i.e. inhibition of AGE binding to receptors). A cream specific for the care of diabetic skin

Key findings

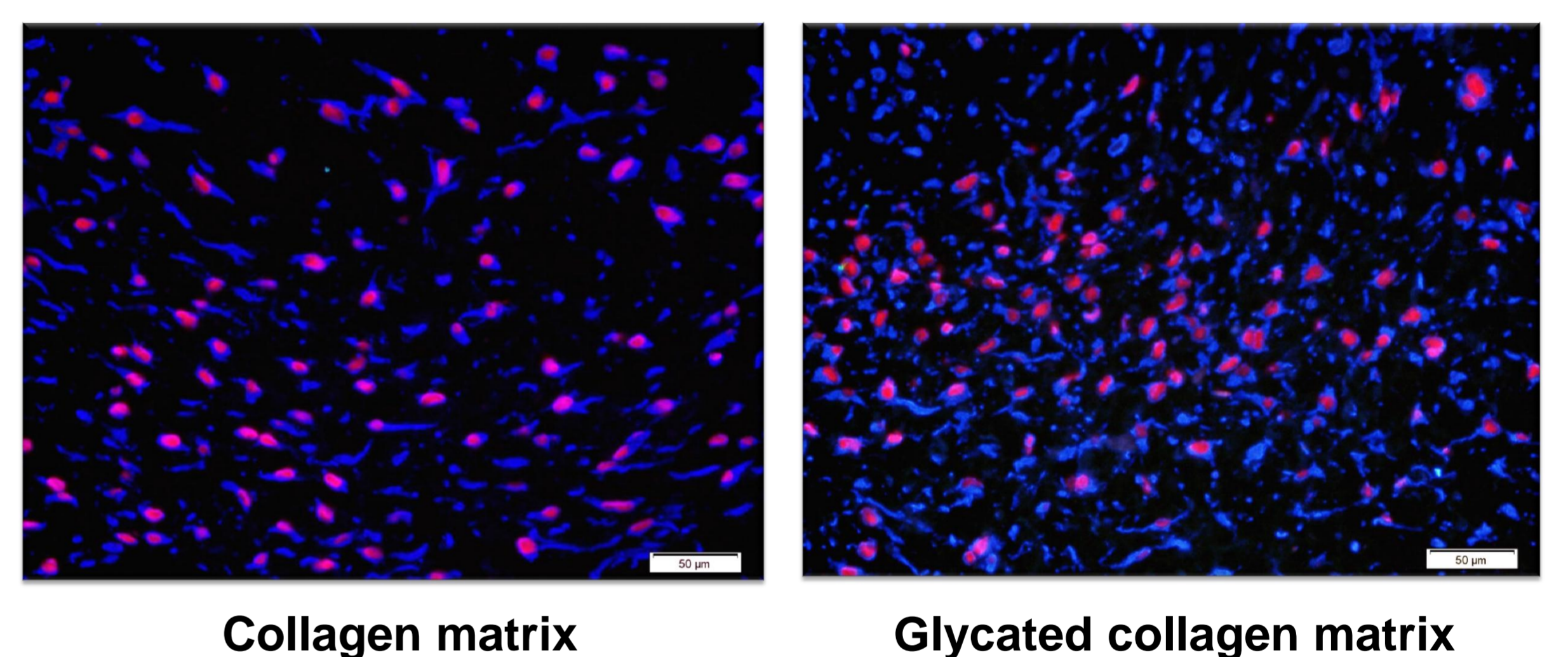
1st Finding: 30 plants with anti-oxidant or other promising ingredients were selected and tested, by viability assays, on human fibroblasts and keratinocytes (3 of them showed cytotoxic effects)



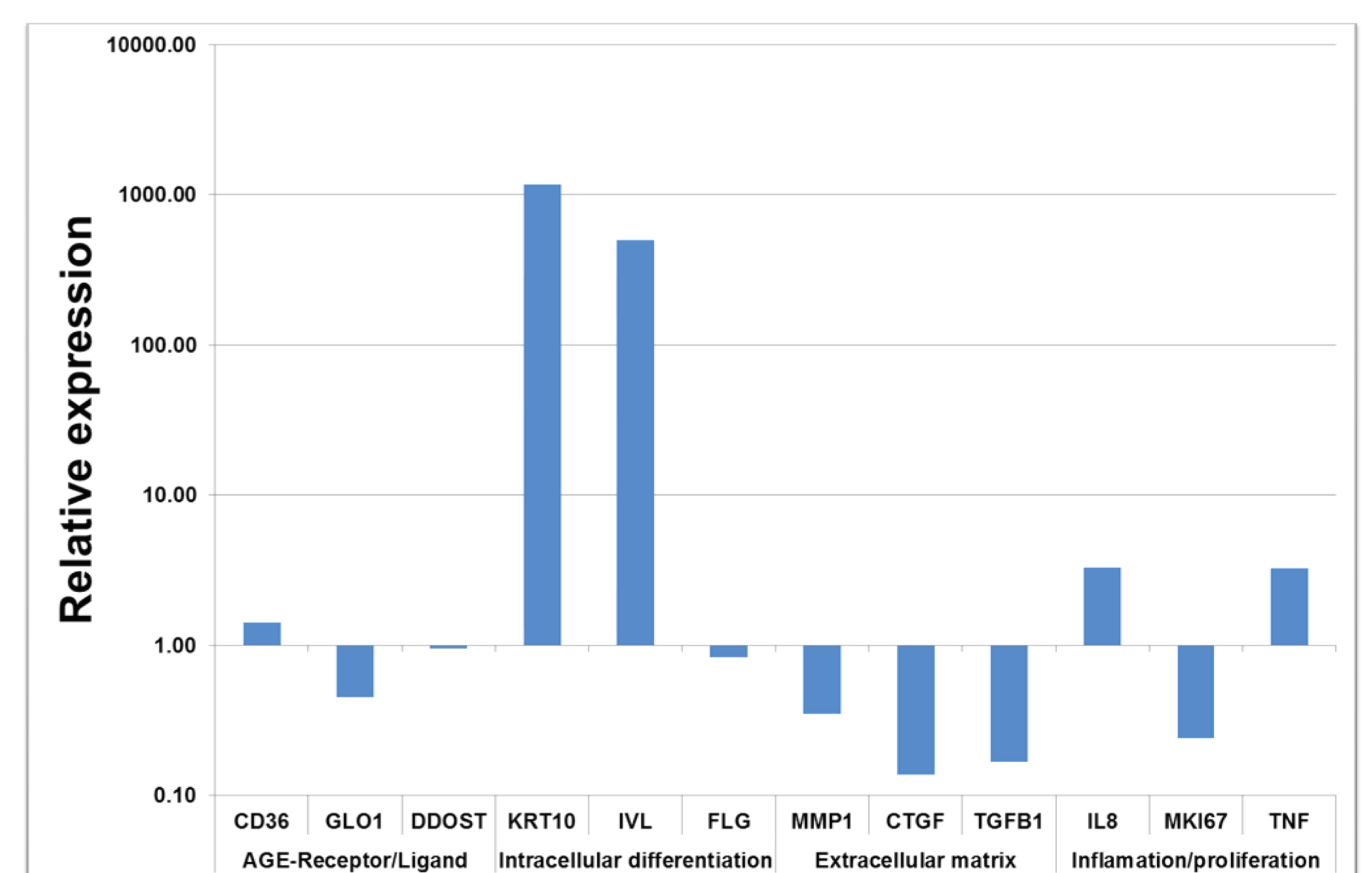
2nd Finding: In order to study in vitro the influence of plant extracts on diabetic skin, a glycated dermal compartment was created. Glycation of collagen, increasing gel stiffness, alters contraction pattern mediated by fibroblasts



3rd Finding: In comparison with unmodified collagen gel, glycated matrix shows how AGE products alter the vimentin distribution of fibroblasts (blue: vimentin; red: cells nucleus)



4th Finding: Gene expression pattern of keratinocytes is altered when the cells are cultivated in the presence of a typical AGE product



Following pre-screening results, two plant extracts which may have an anti-AGE potential on the cellular level were chosen. Further investigations are ongoing to prove their effectiveness

Business potential Currently a wide range of cosmetic products claim to prevent the formation of AGE as anti-aging concept. With a growing population of elderly people suffering from diabetes a new big market is developing for novel cosmetic products able to stop or even reverse the negative effects of AGE on skin features