Amber Extract
INTRODUCTION

About 45 million years ago, the territory of present central and northern Europe was covered by thick "amber forests". It is not known exactly which tree or trees produced amber. The collective name used for these amber-producing trees is Pinus Succinifera, and they produced an unnaturally large secretion of resin.

The name of Amber comes from the Arab, aribar, probably through the Spanish, but this word referred originally to ambergris, which is an animal substance quite distinct from yellow amber. True amber has sometimes been called karabe, a word of oriental derivation signifying "that which attracts straw," in allusion to the power which amber possesses of acquiring an electric charge by friction.

Amber is fossilized resin of ancient trees that grew in "amber forests". Many physical and chemical processes the resin became Amber, bringing to us its unique beauty and scientific data. Amber has an ability to preserve the organic tissues in it and pieces of plants and insects, trapped in amber, are greatly valuable for collectors and scientist as well. Amber unites artists and scientists in their opinions – it is a beautiful and fascinating product of nature.

CHEMISTRY

Amber has no consistent chemical formula though several chemical definitions have been published, amongst them being:

\[ C_{10}H_{16}O_{12} - C_{12}H_{20}O_{13} - C_{40}H_{84}O_{14} \]

The three elements: Carbon, Oxygen and Hydrogen are mainly present in the following proportions: 67-87% Carbon, 15% Oxygen, 8.5-11% Hydrogen. Sulphur is present in small quantities from 0.26%
to 0.34% together with 0.5% of inorganic matter. The name amber relates specifically to fossilised resin which has succinic acid - $\text{COOH}(\text{CH}_2)_2\text{COOH}_{15}$ present in its chemical makeup.

Baltic amber can have succinic acid present between the ranges of 3 to 8 percent. Composition of amber can vary greatly depending on the type of tree, though all have terpenes or compounds that are linked as the resin hardens to amber.

**TRADITIONAL USES**

People used to gather craft and trade amber. The first use of amber in the Baltic Sea region can be traced back to Stone Age. Amber amulet made of Baltic amber was found in Egyptian tombs. Baltic countries have about 100 Neolithic burial sites in which amber is included.

Amber has been credited with numerous beneficial properties both physical and spiritual. The Ancient Romans and Greeks used it to cure ailments such as asthma, rheumatism and internal problems. Its purported healing powers have extended to epilepsy, jaundice, kidney and bladder complaints and even the plague. It has also been used as an aphrodisiac and to guard against witchcraft. It is now believed to be a good source of beneficial negative ions when worn close to or on the skin.

The virtue of an amber preparation was said to be that it: “heals, dries, dissolves; strengthens heart and brain and revives the Animal and Vital Spirits by its sweet sulphur; and is used in perfumes to burn against bad air, and keep the Spirits from infection. Florentine Physicians prescribe some few drops of its oil to be taken in wine for the former purposes. It is used in either powder or oil form.

Amber is a stone of health and fitness, stone of happiness and sun, amorous amulet, capable to attract to you the item of your love. On the psychological influence, the orange (amber) color is exciting and effusive, merry and invigorating, vigorous and hot, but not sexy. In the pre-Christian period, our ancestors thought that in the little caves in the amber the spirits and demons used to live that is why such amber pieces were valued much. The amber talismans in the form of ram head or seashells were very popular in the ancient Italy as guarantee of fertility and ingenious hunt.
Particularly popular were amber forms as fruits, cereals and bestial, as a New Year gift. Amber enjoyed great demand in Middle Ages as amber rosary beads and other subjects of religious cult; Patriarch Nikon had amber crosier. Ancient Greeks used to make gift made of amber to wish somebody happiness. This stone - is a victory carrier; it brings you victory in battle, so big part of amber items found in excavations are warrior's amulets

**COSMETIC PROPERTIES**

The main characteristic actives in Amber are terpenes and succinic acid. Due the presence of these actives, Amber is an adequate ingredient to incorporate into skin care and hair care products. Due to the anti-oxidant and conditioning properties can be incorporated into a great number of skin care formulations.

Cauchard JH et al (2007) carried out a study where amber extract (Pinus species) originated from the Baltic Sea area, was investigated using human normal skin fibroblast cultures. Cells were incubated with purified glycolic amber extract for 4 hours, followed by gene expression analysis using DNA microarray technology. The effect of amber at 2% added to culture medium was investigated to identify changes in gene expression between untreated and treated cells. A statistical and biological pathway analysis of microarray data was performed. After 4 hours amber extract treatment, modulations in gene expression were observed for a set of 92 genes compared to the non-treated cells. The main proportion of the regulated genes can be directly related to dermal metabolism. Expression level of type I, III and V collagen genes increased about 3.4, 2.2 and 1.9 fold respectively after amber extract treatment, whereas the expression of MMP-1 level decreased 0.65 fold. Moreover, the expression of dermatopontin, Small Leucin Rich Proteoglycans (SLRP) such as biglycan, proteoglycans such as versican increased 2.4, 3 and 2.1 fold respectively after amber extract treatment. Amber extract not only directly stimulates dermal extracellular matrix and fibers biosynthesis genes by fibroblasts, but also modulates their assemblage and degradation genes.
Because strengthening capacity and the anti-oxidant and conditioning properties, Amber is also incorporated into hair care products (protectors and leave-in conditioners, promotion of hair strength).

**RECOMMENDED DOSE**

Recommended doses are between 2.0 – 5.0%.

**BIBLIOGRAPHY**