1. **What is Ascorbic Acid?**

Vitamin C is also known as ascorbic acid, ascorbate, or ascorbate monoanion. It is the enolic form of an alpha-ketolactone. Vitamin C works physiologically as a water soluble antioxidant by virtue of its high reducing power. It acts as singlet oxygen quenchers, and it is capable of regenerating vitamin E. Vitamin C is called antioxidant because of its ability of quenching or stabilizing free radicals that lead over time to degenerative diseases, including cancer, cardiovascular disease, cataracts, and other diseases (Goodman & Gilman 1996, Rodrigues-Amaya et al 1997, Hamilton et al 2000, Elliott 1999). Very important role of Vitamin C to decrease rater of skin aging process and to increase wound-healing process. Vitamin C is powerful collagen promotes in the dermal fibroblast an any age. Vitamin C has been widely employed for the treatment of wounds, burns, inflammation, irritation in the skincare industry.

2. **Stability**

Ascorbic acid properties are impaired by its high reactivity, and hence, poor stability in solution. It can be degraded rapidly and immediately
(a) in the presence of oxygen, free-radical mediated oxidative processes;
(b) by transition metal ions, specially iron and cooper;
(c) at neutral pH and above.
(d) by presence of enzymes as ascorbate oxidase and a ascorbate peroxidase (Kirby et al 1991).

Once it becomes unstable, Ascorbic Acid becomes oxidizable in the human body to a form known as dehydroascorbic acid. You will find the color of most of Vitamin C serums on the shelves of SuperMarkets to be black, because they already became unstable and oxidized. Once Ascorbic Acid is oxidized, it becomes a free radical and actually harms the human skin.

3. **Micro-encapsulation Technology in Liposomes**

Therefore, scientists in Switzerland’s Lonzo Laboratories has invented a micro-encapsulation technology to preserve and enhance the stability of Ascorbic Acid, in which we ascorbic acid is micro-encapsulated in liposomes. A **liposome** is a tiny bubble (vesicle), made out of the same material as a cell membrane. Liposomes can be filled with drugs, and used to deliver drugs for cancer and other diseases.
Membranes are usually made of phospholipids, which are molecules that have a head group and a tail group. The head is attracted to water, and the tail, which is made of a long hydrocarbon chain, is repelled by water. In nature, phospholipids are found in stable membranes composed of two layers (a bilayer). In the presence of water, the heads are attracted to water and line up to form a surface facing the water. The tails are repelled by water, and line up to form a surface away from the water. In a cell, one layer of heads faces outside of the cell, attracted to the water in the environment. Another layer of heads faces inside the cell, attracted by the water inside the cell. The hydrocarbon tails of one layer face the hydrocarbon tails of the other layer, and the combined structure forms a bilayer.

When membrane phospholipids are disrupted, they can reassemble themselves into tiny spheres, smaller than a normal cell, either as bilayers or monolayers. The bilayer structures are liposomes. The monolayer structures are called micelles.

The lipids in the plasma membrane are chiefly phospholipids like phosphatidylethanolamine and phosphatidylcholine. Phospholipids are amphiphilic with the hydrocarbon tail of the molecule being hydrophobic; its polar head hydrophilic. As the plasma membrane faces watery solutions on both sides, its phospholipids accommodate this by forming a phospholipid bilayer with the hydrophobic tails facing each other.

Liposomes can be composed of naturally-derived phospholipids with mixed lipid chains (like egg phosphatidylethanolamine), or of pure surfactant components like DOPE (dioleoylphosphatidylethanolamine). Liposomes, usually but not by definition, contain a core of aqueous solution; lipid spheres that contain no aqueous material are called micelles, however, reverse micelles can be made to encompass an aqueous environment.

The name liposome is derived from two Greek words: 'Lipos' meaning fat and 'Soma' meaning body. A liposome can be formed at a variety of sizes as uni-lamellar or multi-lamellar construction, and its name relates to its structural building blocks, phospholipids, and not to its size. In contrast, the term Nanosome does relate to size and was coined in the early 1990s to denote special liposomes in the low nanometer range; liposome and Nanosome are not synonyms. A liposome does not necessarily have lipophobic contents, such as water, although it usually does.

Liposomes were first described by British hematologist
Dr Alec D Bangham FRS in 1961 (published 1964), at the Babraham Institute, in Cambridge. They were discovered when Bangham and R. W. Horne were testing the institute's new electron microscope by adding negative stain to dry phospholipids. The resemblance to the plasma lemma was obvious, and the microscope pictures served as the first real evidence for the cell membrane being a bilayer lipid structure.

4. Switzerland Lonza Laboratories’ Vitamin C 20% Formula

The Swiss scientists at Lonza Lab has created a formula called Brookosome™ ACE, where 20% L’Ascorbic Acid are microencapsulated in a liposome with Vitamin A and Vitamin E. Retinyl Palmitate and Tocopheryl Acetate help to scavenge free radicals responsible for lipid peroxidation. Ascorbyl Palmitate at a rate of 20% works by helping to regenerate the Tocopherol. All three vitamins are provided in the more stable ester form. In the skin the esterase present will hydrolyze the esters down to the active vitamins which will then play their protective role in the lipid membranes found in the epidermis.: 

5. Our formula in particular

Vitamin C when applied topically to the skin can reduce both photo aging and chronological aging. Vitamin C is a major line of defense against reduced Collagen production and therefore is critical in the treatment of aging. As we age and Collagen levels are reduced, there is also a gradual reduction of Hyaluronic acid, the product needed for moisture retention. Vitamin C is also a Tyrosinase inhibitor, the enzyme that triggers the production of Melanin. The use of Vitamin C serum in your daily skin care regime and particularly when combined with gentle glycolic acid peels, is effective in reducing the appearance of unwanted pigment on the skin.

6. Immediate Results. That is the key of our formula!

Our formula is truly an amazing product with a unique concept. Imagine using some of this serum with its soft-silk touch on your face and neck and seeing immediate results! It diminishes the appearance of fine lines and skin imperfections and improves tone and texture, giving your face and neck a slimmer, firmer look. And, if that weren’t great enough, our formulation of Micro Encapsulation of 20% Vitamin C to slow release technology, allowing the Vitamin C to deliver long-lasting benefits, as well. This unique Vitamin A, C and E formula is a powerful antioxidant and moisturizer, helping your skin to look smoother and younger. “C” you later, lines and wrinkles!

7. Ingredient List

Micro-encapsulated Vitamin C 20% (with Vitamin A and Vitamin E), Polysilicone 15, C24-28 Alkyl Dimethicone, Squalene, Salicylic Acid, Glycolic Acid, Cyclomethicone, Natural essential oils, Benzylalcohol, Dehydroacetic Acid.