



Oils and Fats, The Historical Cosmetics¹

MAISON G. DeNAVARRÉ, Research and Development Specialist, Vanda Beauty Counselor,
PO Box 3433, Orlando, Florida 32802

ABSTRACT

Many of the uses of oils and fats in cosmetics are the same as those of antiquity. However, technical progress has taken these natural materials apart and put them together differently. So now cosmetic chemists have the advantages of both natural and man-made fats and oils. Furthermore, today there are available a variety of antioxidants which extend the shelf life of cosmetics made with them.

OILS AND FATS

This very condensed historical use of oils and fats as cosmetics, must also briefly touch on soap, lanolin, and the metallic stearates, inasmuch as all of these are related.

Furthermore, this short history is restricted to the geographical area of the "anvil of civilization," with brief mentions of the Far East, Gaul, and Britannia.

The earliest oil believed to be used on the human body, was crude mineral oil, or petroleum, back 23,000 BC, at the time of the Atlantians.

At 7000 BC, both in Kish and Mesopotamia, pomades and oils based on animal and vegetable fats were already in use, although the pressing of seed and nut oils had not yet begun.

It is believed that it was about the same time that the Chinese used similar products, but written proof is yet to be found.

The Egyptians have been users of oils and fats as cosmetics dating back to 5000 BC. It is they who have, either as papyri or in cuneiform script on tablets and walls of temples, the best ancient records. Use of cosmetics was considered a luxury by them. It was largely restricted to the ruling or priestly class. By this time, too, elaborate glazed ceramic and alabaster containers were also in use. Some have been found in tombs containing residues of oxidized fat, probably based on palm oil, according to modern analysts.

By the 4th millenium the Egyptians had developed the formulation of body oils, lotions, and pomades to a fine art.

During these times, glass containers had been developed for storing the oils. They were fairly crude by modern day standards but were considered elaborate at the time. It was about this time that Egypt reached its peak of development, an era referred to as its golden age. The Egyptians' knowledge of disease, medicine, and cosmetics was no less remarkable than their studies of the sky, mathematics, and the calendar.

In 2600 BC, oil-bearing seeds began to be pressed for their oil content, first by the Accadians in Babylonia, an art then followed by neighboring nations and later by others.

At 2000 BC, ancient Babylonians developed special oils for the mummification of dead bodies, leaving containers of the highly scented oils in the graves, presumably for the spirits to apply.

The use of fragranced skin oils during these times was

for the purpose of health and hygiene. The fragrance was obtained by the maceration of flowers, spices, barks, woods, and resins in oils.

From the year 2000 BC to 1700 BC, the island of Crete developed into a great center of culture and fashion where one could buy imports of finished goods, including cosmetics, as well as oils and fats brought to shipping points by caravans, then by ship to Crete.

The Ebers papyrus was written about this period. It contained many different data on medicines, chemicals, and cosmetics among others.

Oils and fats mentioned in the Ebers papyrus dating at least to 1550 BC lists the following oils, fats, and waxes: aber oil, abra oil, beetle wax, abxersu animal oil, adu animal oil, bullocks fat, cats oil, clear oil, cows fat, cedar tree fat, crocodile oil, goats fat, goose fat, hippopotamus oil, marrow of an ox, mouse oil, olive oil, ram fat, sefet oil, serpent fat, shad fish oil, tallow, oil of two days, van tree oil, wax, and oil of worms.

The papyrus often mentions oil, not further qualified. This could have been castor or linseed oil because they were both indigenous and known at the time. Castor berries were used as a medicine. Castor oil was believed to be a hair restorer by Egyptians, while linseed oil was used for hair growth, as was crocodile fat and the fat of snakes. Palm oil was mainly used on the breasts.

A hair dye was made from the womb of a cat, warmed in oil. If one had red eyes, milk from a woman who bore a son would relieve it. Goose grease and red lead was used similarly.

Cosmetics and makeup were widely used by the famous Egyptian Queen Nefertiti who lived about 1370 BC. This queen was reputed to be truly a beauty.

When the tomb of Tutankhamen was sealed in 1350 BC, it contained the mummified body, suitably embalmed with oils; there were also elaborate gold and alabaster containers filled with pomades and fragranced oils.

By 900 BC the Phoenicians spread the use of both cosmetics and toiletries throughout the known world, not to mention medicines and chemical preparations.

According to legend, Romulus and Remus were the founders of Rome and its subsequent culture at 753 BC. At this time both Greeks and Egyptians had developed many cosmetics and began to be involved with makeup. But as far as is known, the makeup was largely for the eyes, both to exaggerate their size and depth, and to protect them from the everliving tiny gnats omnipresent in the Egyptian atmosphere. Mainly this makeup was made from gum suspensions of pigments in water although some pigmented pomades for the eye area were also in use. These must have had the same drawbacks then as now, namely collecting in the skin folds and wrinkles around the eyes. Hence the wider use of the gum suspensions. But it was the Greek priestesses assigned to the various Godly temples who were probably the first to worry about, and to use, makeup.

The Romans were quick to adopt the skills and knowledge developed by the Greeks and Egyptians, yes even to outdo their forerunners as the years went by.

In the year 700 BC, priests of the temple of the Greek

¹Presented at the AOCS Meeting, New York, May 1977.

god of healing, Aesculapius, began to organize, collect, and preserve the available knowledge on medicinal preparations and cosmetics. This would lead to the "publication" of books on these subjects in subsequent centuries. Among the ingredients used were almond and olive oils, chicken fat, and oesipus from wool of young sheep. The latter was made by heating the newly shorn wool in water and then skimming off the "fat." These materials were used in medicines and cosmetics, the latter consisting of pomatums and oils for cleansing and massage.

At 300 BC, Chinese records show the use of fragranced oils and pomades, particularly for hair grooming.

Cleopatra VII (69 BC) probably has received more praise as a beauty than she deserved. It is thought that she wasn't so beautiful but concocted all kinds of cosmetics, fragrances, and makeup to make herself appear more beautiful. Apparently she succeeded in her efforts according to history.

After Rome had lost its glory, around 450 AD, little change came in the formulation of cosmetics from the fats and oils available. Cosmetics found their way throughout Europe and into Brittainia somewhat following the Roman conquests. Manufacture was often a home industry with the production sold in small shops.

Meanwhile about 900 AD the Arabs are credited with the distillation of wine resulting in a brandy-like product called liquor inflammabilis supernatans and by others, aqua vitae; somewhat later this brandy-like product was further distilled to give a fairly strong alcohol. This added a medium that could be used in conjunction with fats and oils for skin treatments.

About 100 AD, the eight books of Celsus entitled "De Arte Medica" were written as a combined cosmetic and medical compendium.

In the 11th, 12th, and 13th centuries the Crusaders brought back to central Europe and Brittainia cosmetics, toiletries, and perfumes picked up in the Middle East harems.

At the same time fragrances were being developed, using alcohol as a vehicle resulting in further offerings of miraculous products, witness the fabulous claims for cologne water.

During the next 500 years, although the variety of raw materials was limited, the imagination of the vendors knew no limits. Wrinkles could be erased; hair could be grown on bald heads; fragrant oils could either be sexually stimulating or retarding as desired; skin diseases could be cured; these and countless other highly imaginative uses and virtues did not become tempered until after the turn of the 19th century. Today there are still some claims made for products that may be difficult to establish.

By the 15th and 16th centuries AD, cosmetics and medicine as professions were being separated, slowly but nevertheless definitely. Such names as Abdeker (physician to Modammed II), Paracelsus the storm raiser, Giovanni-Battista, Giovanni Marinello, the Medici family, Magellan, Henry VIII, all contributed to the progress of cosmetics, each in their particular way. Hair and treatment cosmetics were most popular followed by makeup.

Florence Wall labels this period as one of disorganization. Medical, chemical, cosmetic, and apothecary divisions of what was one art-science was taking place. As it did, the lore of cosmetics was somewhat left to itself. Barbers took off with anything having to do with hair. Hair dressers' guilds were formed. The first to establish himself as a hair-dresser was a Frenchman named Champagne in 1640. As the influence of Spain waned, France became prominent in all facets of fashion. This period alone would require pages to be properly reviewed.

With settlements in the new world, ideas and customs of

the mother country were brought over. In due course and to varying degrees, the development and use of cosmetics in North America became a home industry in the larger cities, some individuals of which were to eventually become the giants we all know today.

Coming to the end of the century, things began to move at a faster pace in cosmetic development. Chesebrough patented (U.S. 127,568) a method of making Vaseline in 1872. Regular petrolatum was introduced in 1880 and mineral oil in 1890. A bit earlier (1870) commercial quantities of glycerin became available from the soapmaking industry. So, a stable fat or oil coupled with a humectant made it possible to now develop novel products. Present day cold cream, based on beeswax, sweet almond oil, and emulsified with borax and water came into being about the same period (1890). Free fatty acids, notably stearic and oleic, were likewise available. It wasn't until about 1925 that specially fractionated grades were made. Hazeline Snow, a vanishing stearate cream was introduced in 1894, and a bit over a decade later Pond's introduced their cold cream in 1907 in which mineral oil replaced sweet almond oil, resulting in a whiter, smoother, and more elegant product.

Although rancidity was understood as an undesirable phenomenon, methods of coping with it didn't evolve until about 1910 when lard was preserved for pharmaceutical purposes with 1% gum benzoin. As for preservatives, benzoic and salicylic acids and their sodium salts saw some use along with formaldehyde.

Shortly after 1920, the curtain went up on a new group of actors, the polyol stearates. The first commercial one was Tegin. It was basically a self-emulsifying glyceryl stearate containing some unreacted glycerin and stearic acid, 5% potassium stearate, together with a mixture of mono-, di-, and triesters resulting from the method of production. It was introduced commercially about 1927, although the trademark was registered in 1919.

About the same time commercial triethanolamine (TEA) made its debut (1928) opening additional opportunities for emulsion formulation. Since TEA was made by interaction of ammonia and ethylene oxide, it was natural for ethoxylation to be used in the development of ethoxylated emulsifiers. Ethoxylated stearic acid appeared in 1925. Several more ethoxylates were marketed prior to World War II. As we all know, literally hundreds of ethoxylated alcohols, acids, and esters are now available. However, it is of historical interest to note that the ethoxylates that became known as Tweens were experimentally available about 1939.

Following World War II, the entire field of fatty derivatives expanded almost explosively. Phosphatides, lipoamino acids, novel branched chain compounds such as isostearic acid and alcohol, sucrose fatty acid esters, sulfated products, phosphates, lactylates, citrates and tartrates, alkylolamides, and the numerous polyol esters of fatty acids came into being.

With the introduction of sorbitol oleates, stable, fluid, water-in-oil emulsions were now possible. Formerly solid w/o emulsions with a maximum water content of about 50% were made from the alcohol soluble fraction of lanolin and petrolatum developed before the turn of the 20th century.

Since World War II it has become possible to make emulsions of w/o with the internal phase exceeding 90%.

Some of the newer oils are those of the avocado, citrus seeds, peanut, mink, turtle, shark, rice bran, grape seed, jojoba, sunflower, pecan, walnut, wheat germ, and soybean. Among the newer vegetable fats are shea butter, hydrogenated vegetable oils, and karite butter. In the case of animal fats, lard and tallow must be mentioned. Some refined lard has been used in cosmetics. Tallow, of course, is mainly

used in the soap industry and as a source of glycerin and fatty acids.

SOAP

The early history of soap is cloudy. Some have said that the Phoenicians made soap in 600 BC. It was then bartered with the Gauls. Other writers claim that soap was discovered by the Gauls shortly after the beginning of the Christian era. The Greeks made soap from goats' tallow and birch ash which was then scented with spices. Soap came to Rome about 80 BC. At the same time, over 600 pastes, paints, hair dyes, skin creams, and fragranced oils were already in use.

While soap and its use in personal hygiene became popular during the period of the Roman Empire, it is not known whether they learned to make it from the Mediterranean people or from the Celts of Britannia.

Not much is known about the fate of soap from AD 200 to nearly AD 400.

Both Galenus the Greek physician and Theodorus Priscianus referred to it as a medicinal agent used in the treatment of skin ailments. The name Saponarius was given to soap boilers.

Soapmaking stayed in the Mediterranean area through the middle ages with Marseilles as the soap center of the then known world, as far back as 900 AD. In Britain it is recorded that the first soapmaker was in Bristol between the 12th and 14th centuries.

Not much is known of the gradual development of the soap industry except that by the 16th century monopolies in England and France were granted to soap makers.

The making of soap got its great push forward by the discovery of Leblanc who first made soda from salt at the end of the 17th century and Chevreul in the 18th century who determined the composition of fats and oils, enabling the introduction of new fats for making of soap with different properties.

Soap was considered a great luxury by this time. The finer soaps were heavily perfumed and colored, probably to overcome, in part, some of the odor of the soap as well as off colors.

The rest is modern history. The early origins are mentioned solely to tie in the use of oils and fats as toiletries, part of the cosmetic industry.

Today's soap is quite different from that of 1900. Various mixtures of true soap with superfatting agents are especially popular. The superfats are often mixtures of fats and oils with lanolin. Some are emulsified before use. Very recently a toilet soap was patented whose composition included a sucrose fatty acid ester as an emollient. Hand and bathing bars are often made with an 80:20 tallow-coconut oil soap, along with selected synthetic surfactants such as one of the Igepons.

METAL FATTY ACID DERIVATIVES

The first materials of this type were accidentally made

by the Egyptians possibly as early as the second millennium before Christ when they mixed limestone with animal and vegetable fats to use as lubricants on the axles of chariot wheels.

The Egyptians also mixed litharge with linseed oil used in mummification.

Not much is known what happened in the intervening years. In 1758, Macquer referred to metallic soaps. Some 20 years later Berthollet mixed solutions of metallic salts and soap solutions producing metallic soaps.

The subsequent development of metallic soaps was in the paint industry where metallic soaps were used as driers in linseed oil paints.

In the late 19th century, a product called carron oil was widely used for beautifying and other dermatological purposes. It was a mixture of lime water and linseed oil. It was once official in the National Formulary.

Lead oleate was used in the treatment of skin diseases. Zinc oleate and stearate had similar uses. Today the principal metallic soaps used in cosmetics are those of zinc, magnesium, aluminum, lithium, calcium, sodium, and potassium, mainly as stearates.

LANOLIN

As mentioned earlier, crude lanolin was extracted or separated from wool by boiling it in water as early as 700 BC or earlier. The "fat" that floated was removed and was used as such or compounded with oils or other fats. It is probable that this lanolin was partially hydrated, perhaps to the extent of 5-10% water.

The manufacture of lanolin, and that is the name used by the inventors Liebreich and Braun, was patented in 1882. About 10 years later Unna introduced it into ointment and cosmetic formulations. Still later he isolated the alcohols of lanolin by saponification and called the product Eucerinum anhydricum. The hydrated product using a hydrocarbon vehicle in due course, is said to have been sold under the name Nivea.

The lanolin alcohols were used by a number of cosmetic material vendors, blending them with petrolatum, mineral oil, and in some cases lanolin itself. These products were known as absorption bases and were sold under trade names such as Aquaphor, Falba and Protegin.

After World War II, the lanolin alcohols themselves were available under such names as Ceralan, Dusoran, and Hartolan. Since that time, lanolin as such has been reacted with alkoxyating agents. It has been separated into a thick oil and a hard wax fraction. It has been acetylated, hydrogenated, saponified in several ways, and the articles of saponification have been esterified, quaternized, alkoxyated, and further separated into the main components. Today derivatives of lanolin are legion, functioning as emollients, emulsifiers, superfats, beeswax replacements, and conditioning agents.

[Received May 25, 1977]