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To whom it may concern:

The information below describes a variety of oils and their effects on various aspects of mammalian physiology. The data have been sourced from peer-reviewed scientific publications listed on the PubMed website. This is a search engine that accesses primarily the MEDLINE database of references and abstracts on life sciences and biomedical topics. The database is maintained by the United States National Library of Medicine at the National Institutes of Health and is part of the Entrez system of information retrieval.

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Sesame oil

Sesame oil is derived from the plant species *Sesamum indicum* L., an herbaceous annual belonging to the Pedaliaceae family. Sesame oil is rich in anti-oxidants, including sesamin, sesamol, and α -tocopherol. In traditional Taiwanese medicine, sesame oil has been used to relieve joint pain, toothache, skin abrasions and cuts. Recently, sesame oil has been proven to possess potent anti-inflammatory properties (1,2). Sesamin and sesaminol have been shown to prevent the release of pro-inflammatory agents including interleukin-8 and endothelin-1, ultimately preventing inflammation (3). Sesame oil has also found to inhibit the major biochemical pathways involved in inflammation (4). It has been reported that some plant oils contain natural sunscreens. For example, sesame oil resists 30% of UV rays, whereas coconut, peanut, olive, and cottonseed oils block out about 20%. (5,6). Oils that protect against sunburn caused by UV exposure will also reduce the incidence of hyper-pigmentation of the skin.

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In an attempt to discover effective topical photoprotective agents, plant-derived products have been researched for their antioxidant activity. Due to the increased interest and discovery of the effectiveness of natural products the use of natural antioxidants in commercial skin care products is increasing. Effective botanical antioxidant compounds are widely used in traditional medicine and include tocopherols, flavonoids, phenolic acids, nitrogen containing compounds (indoles, alkaloids, amines, and amino acids), and monoterpenes. As the topical application of antioxidants has been shown to affect the antioxidant network in the skin, applying aromatherapy formulations that are rich in antioxidants should stimulate future research (7).

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Castor oil

Castor oil is extracted from the seed of the *Ricinus communis* plant. It is produced by cold pressing the seeds followed by clarification of the oil by heat.

Its primary constituent, ricinoleic acid, as well as some of its salts and esters function primarily as skin-conditioning agents, emulsion stabilisers and surfactants in cosmetics.

Castor oil has been reported to treat skin hyperpigmentation, but to date there have been no supportive clinical studies published.

For thousands of years, folk healers worldwide have used castor oil to treat a wide variety of health conditions. The use of castor oil goes as far back as the ancient Egyptians, who used it to treat eye irritations and as a natural skin care remedy. In India, castor oil has been recognised for its skin-healing and antibacterial properties and is commonly used in traditional Ayurvedic medicine practices.

Castor oil's benefits are as a consequence of its chemical composition. It comprises 89-90% ricinoleic acid, 3-4% linoleic acid, 3% oleic acid, 1% palmitic acid and 1% stearic acid.

Castor oil is considered to be unique because ricinoleic acid is not found in many other substances and castor oil is such a concentrated source. It has been found that castor oil and ricinoleic acid can enhance the transdermal penetration of other molecules.

Therefore in present-day medicine, castor oil is also used as a drug delivery vehicle, for example for very non-polar drugs such as the anticancer drugs paclitaxel and docetaxel (1,2). Ricinoleic acid has also been used in a gel formulation for the transdermal delivery of drugs through the eyelid (3,4). Castor oil has been used successfully as a component of wound healing agents (5,6) and has been used in a hydrogenated form to pull excess dirt from the epidermis (7). It has also been shown that ricinoleic acid topically administered exerts a marked anti-inflammatory effect in several models of inflammation (8).

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Virgin coconut oil obtained from the coconut tree (*Cocos nucifera*) is obtained from fresh, mature coconut kernels without the use of heat and without undergoing a refining process. This treatment retains the important biologically active components in the oil such as antioxidant vitamins and phenolic compounds. Virgin coconut oil has been reported to have anti-microbial, and anti-inflammatory properties (1–3). Diet supplemented with virgin coconut oil was shown to increase the antioxidant status in rats (4).

Coconut oil has also been reported as very effective against a variety of lipid-coated viruses such as visna virus, CMV, Epstein-Barr virus, influenza, virus, leukemia virus, pneumo virus and hepatitis C virus. The medium chain fatty acids in coconut oil destroy these organisms by disrupting their membranes, thus interfering with virus assembly and maturation (5).

In a randomised double blind clinical trial, virgin coconut oil was shown to be effective in reducing trans-epidermal water loss in patients with atopic dermatitis (6). It has also been shown to reduce trans-epidermal water loss when applied to the skin of very low birth weight infants (7).

Coconut Oil In Traditional Medicine

People from many diverse cultures have considered the coconut a valuable source of both food and medicine. In traditional medicine coconut is used to treat a wide variety of health problems (8) including the following: abscesses, bruises, burns, earache, fever, flu, gingivitis, rash, scabies, scurvy, skin infections, ulcers and wounds.

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Lavender essential oil

Essential oils distilled from members of the genus *Lavandula* have been used both cosmetically and therapeutically for centuries with the most commonly used species being *L. angustifolia*, *L. latifolia*, *L. stoechas* and *L. x intermedia*.

Among the claims made for lavender oil are that it is antibacterial, antifungal, carminative (smooth muscle relaxing), sedative, anti-depressive and effective for burns and insect bites. However, despite its long tradition of use, it is only recently that science-based investigations into the biological activity of the various *Lavandula* species have been undertaken to any great extent.

There are eight main components of this oil (1, 2), the relative concentrations of which vary in different species. However, the activity of linalool reflects that of the whole oil, which indicates that linalool may be the active component of lavender oil (3).

Several reports (1, 2, 4) describe the anti-microbial effects of lavender oil, (specifically *Lavandula stoechas* L.) supportive of good anti-microbial activity against most bacteria, yeasts and filamentous fungi. Lavender oil has also been reported to relieve stress (5,6) and to be effective in the treatment of ear pain (acute external otitis) (7,8). Lavender essential oil is also reported to reduce anxiety and to improve mood when it is inhaled or administered orally.

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Roman chamomile

Chamomile (*Chamaemelum nobile* L) is a member of the daisy family (*Asteraceae* or *Compositae*) and is one of the oldest, most widely used medicinal plants in the world. Its use is well documented and has been recommended for a variety of healing applications (1). Roman chamomile is renowned for its production of essential oils, of which major components are sesquiterpenoids.

Roman chamomile is regarded as an antiseptic, antibiotic, bactericide, disinfectant and fungicide and vermifuge. It has also been reported to increase the rate of wound healing (2,3).

The efficacy of the topical use of chamomile to enhance wound healing was evaluated in a double-blind trial on 14 patients who underwent dermabrasion of tattoos. In this study chamomile was judged to be statistically efficacious in producing wound drying and in speeding epithelialisation (4).

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Macadamia nut oil

Macadamia nut oil is rich in monounsaturated fatty acids. It contains approximately 65% oleic acid (C18:1) and 18% palmitoleic acid (C16:1) of the total content of fatty acids (1). Macadamia oil is the main source of palmitoleic acid in the human diet. A study carried out which investigated the inhibitory effects of on melanin biosynthesis and its possible use in cosmetics, concluded that palmitoleic acid is a candidate anti-melanogenic agent which might be effective in hyperpigmentation disorders (2).

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This document was prepared for Venita Machnicki by Deirdre McIntosh M.I.Biol, M.Phil, Ph.D.