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# Amish Culture and Their Utilization of Burns and Wounds Ointment for the Treatment of Burns

■ *Krystal Melich Trinkle, RN, BSN, CCIT*

As indicated in the 2010 United States Religion Census,<sup>1</sup> there are approximately 251 000 Amish people in the United States and Ontario. This census also demonstrated that a new Amish community is founded on average about every three-and-a-half weeks, suggesting that this religious culture is the fastest-growing religion throughout the United States.<sup>2</sup> Because of the rapid growth of the Amish population, it is essential for health care workers to understand their background, cultural, and health care beliefs, especially in the treatment of burns. The purpose of this article is to examine the Amish background, cultural, and health care beliefs, specifically the utilization of burns and wounds ointment and burdock leaves in the treatment of burns. **KEY WORDS:** *Amish culture, Amish, burns, burdock leaves, burns and wounds, B&W ointment, ointment* *Holist Nurs Pract* 2016;30(2):78–87

History has shaped Amish beliefs and formed a culture much different than traditional American culture. The Amish culture has many different values that descend from their history as Europeans with devout religious beliefs. These values include avoiding worldliness, the love of money, seeking personal comforts and pleasure, participating in self-enhancing activities such as fashionable dress, and gaining education beyond what is needed.<sup>3</sup> The Amish faithfully practice submission, humility, forgiveness, and nonresistance to achieve their ultimate goal of eternal life.<sup>3</sup> Their devotion to these values has further shaped the way they approach health care and medical practice today. Most notably is the way the Amish treat burns and wounds with natural remedies such as burns and wounds (B&W) ointment and burdock leaves.

## AMISH BACKGROUND

The Amish movement originated from Swiss Anabaptists in Europe in 1693, which emerged in the wake of the Protestant Reformation.<sup>3,4</sup> “They took their name from Jakob Ammann of Switzerland (and later, Alsace) who stood for the epitome of conservatism,” and became known as the Alastian Anabaptists or the Old Order Amish as we know today.<sup>3,4</sup> During the time of reformation, the Amish founders felt that the great reformers such as Luther did not go far enough in reforming the church. Because of this belief, thousands of Amish were labeled as heretics at the hand of the church and state. “They were burned at the stake, tied to wagon wheels, placed in sacks and thrown in the river and tortured in other cruel ways.”<sup>3</sup> The Amish, who were lucky enough to survive, fled to the hills of Switzerland, Germany, and Alsace, and when William Penn extended invitations to persecuted Europeans, the Amish took the journey across the Atlantic and settled in America.

The Amish first arrived in Philadelphia on October 2, 1727, on board the ship *The Adventurer*.<sup>3</sup> After arriving in Philadelphia, the Amish began settling in what is known today as Berks, Chester, and Lancaster counties in southeastern Pennsylvania.<sup>3</sup> Today, Amish communities can be found in 24 states and in the Canadian province Ontario; however, 70%

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of the Amish population reside within Pennsylvania, Indiana, and Ohio, with half of Pennsylvania's Amish population residing in Lancaster.<sup>3,4</sup>

Old Order Amish communities are a type of farming community similar to the ones found in Europe several hundred years ago.<sup>5</sup> These communities are usually located around small rural towns.<sup>3</sup> "Amish society is organized around three basic social units: settlement, district, and affiliation."<sup>4</sup> A settlement consists of all the Amish families living in a common geographical area and can range in size from 12 families to several thousands.<sup>4</sup> The church district "is the basic organizational unit above the family in Amish society."<sup>4</sup> The church district includes 25 to 35 families that live in the same immediate locale, with church services being held within the homes of the families.<sup>4</sup> Affiliation is "a cluster of Amish congregations that are in spiritual fellowship."<sup>4</sup>

The Amish are a conservative and private group that lives without modern-day conveniences and luxuries.<sup>5</sup> Amish families have an average of 6 to 7 children, who attend school only up until 8th grade, as high school is unnecessary and detrimental to their community.<sup>3</sup> After 8th grade, children take their roles in the family as farmers or workers in local businesses or trade.<sup>4</sup> Married Amish women typically work at home, and are involved in craft shops and other businesses.<sup>4</sup> Single women can work in restaurants, as domestics in motels and private non-Amish homes, as teachers, clerical workers, and clerks in retail stores and produce markets.<sup>4</sup>

## CULTURAL BELIEFS

The Old Order Amish have strict cultural beliefs, which dictate their way of life. The Amish see themselves "as the recipients of an undeserved gift (eternal life) they must live in a voluntary community of committed believers who practice the attributes of Jesus—such as submission, humility, forgiveness, suffering, non-resistance, and walking in righteousness."<sup>3</sup> Their highest value and ultimate goal in life is the achievement of eternal life.<sup>3</sup> To achieve eternal life, the Amish believe they must be separate from the world as the Bible teaches, "be not conformed to the world."<sup>3</sup> Because of this belief, the Amish avoid worldliness, which consists of the love of money, seeking personal comforts and pleasure, and self-enhancing activities such as fashionable dress and education beyond what is needed.<sup>3</sup> Furthermore, the

Amish are not allowed to bear arms, or swear oaths, no matter the consequences as these activities do not follow the peaceful example of Christ.<sup>3</sup>

The Amish believe that religion is an individual matter; therefore, the church cannot impart divine grace through its organization or hierarchy.<sup>3</sup> Church and state are considered separate in the minds of the Amish, and they want absolute freedom in conducting religious affairs.<sup>3</sup> For these reasons, preaching services are held in the homes of families in the district.<sup>3</sup> One of the greatest differences between Amish religion and Christianity is their beliefs about baptism. In the Amish culture, infants are not baptized because they cannot profess their faith. Instead, Amish citizens are baptized after confessing their faith when they reach adulthood.<sup>3</sup>

In regard to family beliefs, the Amish do not permit divorce; therefore, desertion and separation is rare.<sup>3</sup> Men are expected to provide adequate sustenance for their families; however, excessive pursuit of luxuries and lustful appetites are viewed as harmful to the soul.<sup>3</sup> They believe "if any provide not . . . for those of his own house, he hath denied the faith, and is worse than an infidel."<sup>3</sup> Amish mothers never consider both working outside the home and raising a family; they instead choose one or the other.<sup>3</sup> The grandfather is considered the patriarch of the family. When he reaches retirement, his social status is elevated. Retired Amish men refuse any sort of pension check, and instead Amish mutual aid provides the Amish form of "social security" to any of their community members.<sup>3</sup>

## HEALTH CARE BELIEFS

The Amish find no Biblical grounds for opposing modern health practices; however, many times they will consult the Almanac and choose home remedies first over conventional health care modalities.<sup>3</sup> Many factors influence their choices in regard to health care including their trust in God for healing, reliance on each other within their communities, a preference for natural remedies, limited access to health care, and attempts to minimize health care costs.<sup>6</sup> Home remedies are usually prescribed by "Amish healers" within the community, and it is believed by the Amish community that these natural cures are the best.<sup>6,7</sup>

The Amish rarely have health insurance because of their beliefs of self-sufficiency and separation from the world. They instead function as private payers, making the minimization of health care cost a major influence

on their health care decisions.<sup>5</sup> By not driving motor vehicles, the Amish are often forced to hire drivers for medical visits, which greatly add to their health care costs, further influencing their decisions in regard to health care.<sup>8</sup> Although cost is a major factor in the health care decisions of the Amish, they still want the best care available for their loved ones.<sup>3</sup>

The Amish Bishop also plays a vital role in health care treatment decisions within the Amish community.<sup>8</sup> As a spiritual leader of the church district, the Bishop acts as the intermediary between church members and the outside world.<sup>8</sup> He can either be the facilitator or barrier to health care depending on his views in regard to preventive health care, and whether or not it indicates a lack of faith in God and God's will.<sup>8</sup> As long as the core Amish religious beliefs are not violated, the Bishop allows for individual preferences in regard to health care providers.<sup>8</sup> These spiritual leaders can also be a barrier to specific health care agencies if they have heard of unsatisfying experiences with the specific agency.

The Amish will only obtain services from a health care agency that they feel can be trusted to respect the Amish culture and way of life. This leads to the enlistment and cooperation of doctors who are willing to allow Amish burn teams to use B&W ointment and burdock leaves while the patient is under medical supervision at certain hospitals in the United States.<sup>7</sup> This cooperative treatment strategy allows for precise assessment of burn depth and extent, as well as medical monitoring for dehydration, infection, and other complications, while providing the Amish with the freedom to practice their natural healing modalities.<sup>7</sup> These modalities include the utilization of B&W ointment, which is an ointment placed topically over all stages of burned skin, followed by a burdock leaf dressing to hold the ointment on the damaged skin.<sup>6</sup>

## ANATOMY OF A BURN

The skin is the largest organ of the human body.<sup>9</sup> There are 2 major layers of the skin: the epidermis and the dermis.<sup>9</sup> These 2 layers are further divided into several sublayers. The epidermis, which is the outer layer of skin, is composed of stratified epithelial cells about 0.15-mm thick.<sup>9</sup> There are no blood vessels in the epidermal layer. This layer has the ability to grow back after a burn injury because the epidermal cells surrounding sweat, oil glands, and hair follicles extend

into the dermal tissue and can regrow to heal partial-thickness burns.<sup>9</sup> The sweat, oil glands, and hair follicles comprise the dermal layer.<sup>9</sup> The depth of the dermal layer depends on the body area it is covering.<sup>9</sup>

The skin has many functions that help the body maintain health. The skin is a protective barrier against injury and microbial invasion, helps maintain the delicate fluid and electrolyte balance essential for life, and it is a sense organ for pain, pressure, temperature, and touch.<sup>9</sup> In a burn injury, these functions can be dramatically affected.<sup>9</sup>

The severity of a burn is determined by 2 factors: the total body surface area involved and the depth of the burn.<sup>9</sup> The degree of tissue damage is dependent on what agent caused the burn and how long the skin was exposed to the heat source.<sup>9</sup> Because of the thickness of skin differing across the body surface, areas of thin skin will burn quicker, and be deeper than areas of thicker skin exposed to the same heat source for the same period.<sup>9</sup> Burns are classified as superficial thickness (first degree), superficial/deep partial-thickness (second degree), and full-thickness/deep full-thickness (third degree).<sup>9</sup>

Superficial thickness or first-degree burns have the least damage because the epidermis is the only layer of skin affected.<sup>9</sup> The epithelial cells and basement membrane, which are needed for total regrowth, remain intact and unaffected.<sup>9</sup> Superficial-thickness burns are caused by prolonged exposure to low-intensity heat (sunburn) or short (flash) exposure to high-intensity heat.<sup>9</sup> Symptoms include redness with mild edema, pain, and increased sensitivity to heat.<sup>9</sup> Desquamation (peeling of dead skin) occurs for 2 to 3 days after the burn.<sup>9</sup> Healing is usually complete after 3 to 5 days with no scar formation or other complications.<sup>9</sup>

Partial-thickness or second-degree burns involve the entire epidermis and varying depths of the dermis.<sup>9</sup> Depending on the extent of dermal damage, partial-thickness burns can be further divided into superficial partial thickness and deep partial-thickness burns.<sup>9</sup> Superficial partial-thickness burns are caused by heat injury to the upper third of the dermis, therefore leaving good blood supply.<sup>9</sup> These burns are red and moist, and blanch (lighten) when pressure is applied.<sup>9</sup> The small vessels that supply blood to this area are damaged, causing leakage of large amounts of plasma, which lifts off the heat-destroyed epidermis forming blisters.<sup>9</sup> These burns are particularly painful because of exposed nerve endings. With standard

treatment these burns take approximately 10 to 21 days to heal with no scar; however, pigment changes may occur.<sup>9</sup> Deep partial-thickness burns extend deeper into the dermis and fewer healthy cells remain.<sup>9</sup> Blisters usually do not form because of the dead tissue layer sticking to the underlying dermis.<sup>9</sup> The burn surface is red and dry (few blood vessels patent and blood vessel constriction) with moderate edema.<sup>9</sup> The burned area may blanch slowly or not at all.<sup>9</sup> These burns are less painful because more of the nerve endings have been destroyed.<sup>9</sup> These burns have the potential to progress to full-thickness burns when tissue damage increases with infection, hypoxia, and ischemia (from vasoconstriction).<sup>9</sup> Deep partial-thickness burns can heal within 3 to 6 weeks with scar tissue formation.<sup>9</sup>

Full-thickness burns or third-degree burns damage the entire epidermis and dermis, leaving no healthy skin cells to repopulate damaged skin; therefore, there is no capability for this wound to regrow, requiring skin grafting.<sup>9</sup> This burn has a hard, dry, leathery eschar that forms from coagulated particles of destroyed dermis.<sup>9</sup> Eschar is dead tissue that must slough off or be removed from the wound so that healing may occur.<sup>9</sup> Edema is severe under the eschar, and may require an escharotomy in circumferential injuries to relieve pressure and allow normal blood flow.<sup>9</sup> The wound may appear waxy white, deep red, yellow, brown, or black.<sup>9</sup> Sensation is severely reduced or absent because of nerve ending destruction.<sup>9</sup> Healing of these burns depends on the establishment of a good blood supply to the injured areas, and can take weeks to months.<sup>9</sup> Deep full-thickness burns extend beyond the skin into the underlying fascia and tissues including muscle, bone, and tendons.<sup>9</sup> The wound is blackened and depressed, and sensation is completely absent.<sup>9</sup> These burns require excision and grafting, and potentially amputation if an extremity is involved.<sup>9</sup>

## B&W OINTMENT AND BURDOCK LEAVES

B&W ointment was developed in the 1980s by Amish community member John Keim when his 2-year-old child was severely scalded.<sup>6</sup> Keim and family members perceived the medical dressing changes as torture, which led Keim to search for some form of nonstick dressing utilizing natural remedies.<sup>6</sup> Keim credits divine guidance in discovering burdock leaves

(*Arctium minus*) as a substitute for gauze dressing.<sup>6</sup> Keim chose these particular leaves because of their texture and large size, allowing them to cover most burned areas.<sup>6</sup> Keim and other Amish caregivers claim that burdock leaves (*A. minus*) have analgesic or anti-inflammatory effects on swollen tissues and open wounds.<sup>6</sup> Keim also developed B&W ointment that contains the natural ingredients honey, lanolin, olive oil (*Olea europaea*), wheat germ (*Triticum* spp), marshmallow root (*Althaea officinalis*), aloe vera gel (*Aloe barbadensis* miller), sweet wormwood (*Artemisia annua*), comfrey root (*Symphytum* spp), white oak bark (*Quercus alba*), Indian tobacco (*Lobelia inflata*), glycerin, beeswax, and myrrh (*Commiphora* spp).<sup>10</sup>

### Burdock leaves (*A. minus*)

“Common burdock (*Arctium minus*) is a biennial plant that can reach heights of six feet with heart shaped leaves, at maturity, the plant produces burs that commonly attach to clothing or animal fur.”<sup>10</sup> This plant is found in many states within the United States and is also in parts of Southern Canada.<sup>10</sup> The leaves, roots, and seeds of the burdock plant have been used for hundreds of years in Asian, European, and Near Eastern Medicine.<sup>7,11</sup> Burdock was also documented in *The Compendium of Materia Medica* written by Li Shizhen, who is viewed as one of the important figures in the history and development of traditional Chinese medicine during the Ming dynasty.<sup>11</sup> Traditionally, burdock was used to treat diseases such as sore throat and many infections including rashes, boils, and various skin problems.<sup>11</sup> The major active ingredients in burdock are tannin, arctigenin, arctiin, beta-eudesmol, caffeic acid, chlorogenic acid, inulin, tracheologenin 4, sitosterol-beta-D-glucopyranoside, lappaol, and diartigenin.<sup>11</sup> These active ingredients help to strengthen the body’s immune system, improve metabolic function, and provide anti-inflammatory, antidiabetic, antimicrobial, and antiviral actions.<sup>11</sup> Contact dermatitis from the overuse of burdock against the skin has been the only common adverse side effect reported from burdock use.<sup>11</sup>

### Honey

Since ancient times, honey has been used in wound care mostly as an ingredient or carrier vehicle rather than as the specific treatment.<sup>12</sup> Dioscorides wrote about honey as a vehicle for carrying therapeutic

agents in *De Materia Medica*, and Hippocrates advocated honey as one of the many unguents in wound care.<sup>12</sup> The first written reference to honey's use as a drug and ointment was a Sumerian tablet writing dating back to 2100 to 2000 BC.<sup>12</sup> One of the first texts that depict honey as a treatment modality in wound care is found in the Edwin Smith papyrus, an Egyptian surgical text written between 2600 to 2200 BCE.<sup>12</sup> Honey has also been recommended for burn treatment in the *London Medical Papyrus*, which was written around 1325.<sup>12</sup> Honey is also mentioned in other early medical customs including Ayurvedic, Chinese, and Roman traditions.<sup>12</sup>

Honey has been used as a method to accelerate wound healing.<sup>13</sup> The healing properties of honey include antibacterial activities, ability to maintain a moist wound environment promoting healing, and a high viscosity that helps provide a protective barrier in the prevention of infection.<sup>13</sup> The antibacterial properties of honey accelerate the growth of new tissue to heal the wound.<sup>13</sup> These antibacterial properties are attributed to its high osmolarity (high sugar, low moisture content), an acidic pH ranging from 3.2 to 4.5 (which is low enough to be inhibitory to several bacteria), and content of hydrogen peroxide and nonperoxide components (presence of phytochemical components such as methylglyoxal).<sup>13</sup>

Topical application of honey has been shown to improve healing of superficial and partial-thickness burns as compared with conventional dressings.<sup>10</sup> It also has the ability to rapidly clear deep infections in surgical wounds that do not respond to the conventional therapies of antibiotics and antiseptics, including wounds infected with methicillin-resistant *Staphylococcus aureus*.<sup>13</sup> In fact, many multidrug-resistant bacteria have been found to be susceptible to honey including *Proteus* spp, *Serratia marcescens*, *Vibrio cholera*, *S. aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Stenotrophomonas maltophilia*, *Acinetobacter baumannii*, *Allium schubertii*, *Haemophilus parahaemolyticus*, *Micrococcus luteus*, *Cellulosimicrobium cellulans*, *Listonella anguillarum*, *Helicobacter pylori*, *Salmonella enteric serovar Typhi*, and *Mycobacterium tuberculosis*.<sup>13</sup>

Although honey has been shown to have an antibacterial effect, it is important to recognize the many factors that can contribute to the antimicrobial potency. Geographical location, seasonal and botanical source, harvesting procedures, processing, and storage conditions can all affect the potency of

honey.<sup>13</sup> Findings also indicate that physical property along with geographical distribution and different floral sources may play an important role in the antimicrobial properties of honey.<sup>13</sup> The antimicrobial activity of honey may range from concentrations of 3% to 50% and greater, and the bactericidal effect of honey is dependent on the concentration of honey as well as the specific bacteria.<sup>13</sup> Therefore, the higher the concentration of honey, the greater antimicrobial properties it provides.<sup>13</sup>

## Lanolin

The emollient properties of lanolin have made it medically useful for thousands of years.<sup>14</sup> The name "lanolin" is derived from the contraction of 2 Latin words, *lana* meaning wool and *oleum* meaning oil.<sup>14</sup> Ever since Braun described his process to purify wool wax, forming a stable emulsion of wool fat over 100 years ago, lanolin has been utilized in modern medical care. Lanolin is a combination of cholesterol, sterols, free and esterified fatty acids, waxes, and hydrocarbons.<sup>14</sup> This emollient is obtained from wool shorn from sheep, which is then highly refined to meet worldwide pharmaceutical standards.<sup>14</sup> Emollients provide a "lipid film onto the skin surface restoring the epidermal barrier, reducing epidermal water loss, and thus hydrating the skin."<sup>14</sup> Lanolin is able to "penetrate through the stratum corneum to the intercellular spaces down as far as the stratum granulosum where it attracts water to form small droplets," thereby acting like a sponge holding water. The water is then able to be released into dry stratum corneum as needed.<sup>14</sup> Because of this ability, the skin surface becomes smoother, allowing small fissures and cracks to close, which further reduces potential entry sites for infection.<sup>14</sup> Lanolin has also been shown to increase the rate of wound healing by creating a moist environment to assist re-epithelialization and dermal repair.<sup>14</sup>

## Olive oil (*O. europaea*)

For centuries, olive oil (*O. europaea*) was utilized for skin protection and lubrication.<sup>15</sup> Olive oil has been medicinally referenced in the Bible, Quran, and numerous historical documents.<sup>15</sup> Olive oil is a product of olives native to the Mediterranean Middle East and is the purest fat obtainable.<sup>15,16</sup> Olive oil is produced by means of physical pressure, without the use of chemicals.<sup>16</sup> The absence of chemicals allows olive oil to be used in burn treatment.

When burning begins to destroy the skin, one of the stratum corneum first reactions is to secrete fatty acids in an attempt to restore the permeability barrier.<sup>17</sup> Olive oil contains high levels of monounsaturated fatty acids and has the potential to help restore the permeability barrier.<sup>17</sup> These “fatty acids are an important component of cell membranes at the burn site, as they make the cell membranes more fluid compared with saturated fatty acids, and in this way hasten cell metabolism.”<sup>17</sup> The fatty acids in olive oil also act as a barrier, and provide antimicrobial properties potentially reducing wound contamination and water loss.<sup>17</sup> Olive oil also contains vitamin E and the phenol compounds hydroxytyrosol, tyrosol, oleuropein, L-acetoxypinoresinol, and (+)-pinoresinol, which are all known to contain powerful antioxidant properties.<sup>17</sup>

### Wheat germ (*Triticum* spp)

“Wheat germ (*Triticum* spp.) is the nutrient rich embryo of the wheat kernel.”<sup>18</sup> Wheat germ is high in protein and contains the essential vitamins and minerals of potassium, iron, vitamin B, zinc, and vitamin E.<sup>18</sup> It is also one of the richest natural sources of alpha-tocopherol, the tocopherol with the greatest vitamin E activity.<sup>19</sup> Wheat germ oil is also rich in vitamins A and D, and known for its antioxidant properties.<sup>10</sup> Because of these properties, wheat germ is helpful in lubrication of the skin.<sup>6</sup>

### Marshmallow root (*A. officinalis*)

The marshmallow plant (*A. officinalis*) has been used for centuries in medicine as well as food.<sup>20,21</sup> *Althaea* is derived from the Greek word *altho* meaning “to cure” and the family name Malvaceae originates from the Greek word *malake* meaning “soft” because of the special quality of softening and healing.<sup>21</sup> The marshmallow plant is found in the salt marshes of North America, Western Europe, and Russia.<sup>20</sup> This plant has been utilized in traditional European medicine for more than 2000 years.<sup>21</sup>

Historically, marshmallow was utilized as a poultice for wounds, burns, scalds, and bruises, but is currently used in the United States and Europe as an antitussive.<sup>6,20</sup> The mucilage isolated from the roots of marshmallow has been incorporated into ointments and food to provide bulk and texture.<sup>20</sup> In addition to the mucilage property, marshmallow has been identified as a potential source of immuno stimulatory

secondary metabolites including flavonoids, coumarins, and glycosides.<sup>20</sup> Marshmallow can be used for both inner and outer inflammatory conditions.<sup>21</sup> The slippery consistency of marshmallow root allows from dressings to be removed with ease and prevents them from sticking to the wound bed.<sup>7</sup>

### Aloe vera (*A. barbadensis* miller)

Aloe vera (*A. barbadensis* miller) belonging to the Liliaceae family has been used in medicine since 6000 BC.<sup>22</sup> It was described in ancient Egyptian papyrus and Mesopotamian clay tablets for the use of curing infections, treating skin problems, and for its laxative properties.<sup>22</sup> Nefertiti and Cleopatra were known to have utilized Aloe Vera as part of their beauty regimens.<sup>22</sup> Legend states that Alexander the Great captured the island of Socotra in the Indian Ocean to secure the aloe supplies to treat his wounded soldiers.<sup>22</sup> Aloe has also been used in traditional Chinese medicine, where the inner lining of its leaves is described as a “cold” remedy, used to clear constipation because of accumulation of heat (fire), and the gel is considered cool and moist.<sup>22</sup> In Ayurvedic medicine, aloe is used as a laxative, antihelminthic, hemorrhoid remedy, and uterine stimulant.<sup>22</sup>

Today, aloe vera is utilized in skin lotions, sun blocks, and many cosmetics.<sup>22</sup> “Aloe vera contains 75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids, and amino acids.”<sup>23</sup> Aloe vera contains vitamins A (beta-carotene), C, E, B12, folic acid, and choline, which have powerful antioxidant properties.<sup>23</sup> There are 8 enzymes, alliinase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulose, lipase, and peroxidase.<sup>23</sup> Bradykinase helps to reduce inflammation when topically applied to the skin, and the other enzymes help to break down sugars and fats.<sup>23</sup> Aloe vera contains C-glucosyl chromone, a sugar compound that provides anti-inflammatory effects.<sup>23</sup> The anthraquinones aloin and emodin act as analgesics, antibacterials, and antivirals.<sup>23</sup> Anthraquinones are considered potent laxatives—increasing water content, stimulating mucous secretion, and increasing intestinal peristalsis.<sup>23</sup> Cholesterol, campesterol, beta-sitosterol, and lupeol found within aloe vera all have anti-inflammatory actions, and lupeol also contains antiseptic and analgesic properties.<sup>23</sup> The hormones

auxin and gibberellins also have anti-inflammatory action as well promoting wound healing.<sup>23</sup>

“Glucomannan a mannose non polysaccharide, and gibberellin a growth hormone interact with growth factor receptors on the fibroblast, thereby stimulating its activity and proliferation, which in turn significantly increases collagen synthesis after topical and oral use of aloe vera.”<sup>23</sup> The aloe gel increases collagen synthesis and changes collagen composition (more type III), and further increases the cross-linking of collagen, thus accelerating wound contraction and increasing the breaking strength of the resulting scar tissue.<sup>23</sup> Aloe vera gel has also been found to increase the synthesis of hyaluronic acid and dermatan sulfate in the granulation tissue of a healing wound.<sup>23</sup> By inhibiting the cyclooxygenase pathway, aloe vera is able to reduce prostaglandin E2 production from arachidonic acid, causing an anti-inflammatory effect.<sup>23</sup> Alprogen, found with aloe vera, inhibits calcium from entering into mast cells, further inhibiting the antigen-antibody-mediated release of histamine and leukotriene from mast cells.<sup>23</sup> Mucopolysaccharides aid in binding moisture to the skin, and stimulate fibroblasts, which produce collagen, and elastin fibers make the skin more elastic and less wrinkled. Aloe vera also has a cohesive effect on the superficial epidermal cells, causing them to stick together resulting in softer skin.<sup>23</sup>

### Sweet wormwood (*A. annua*)

The medicinal use of sweet wormwood (*A. annua*) has been a part of Chinese herbal medicine for centuries.<sup>6</sup> It is an annual herb native to the Asian continent.<sup>24</sup> Sweet wormwood is an important ingredient in many Ayurvedic formulations and is used in treating various ailments.<sup>24</sup> The leaves provide anti-inflammatory effects and are widely utilized in the treatment of malaria.<sup>24</sup> Its antimalarial properties are derived from the interference with the plasmodial hemoglobin catabolic pathway, and the inhibition of heme polymerization.<sup>24</sup> The essential oils obtained from this plant provide powerful antimicrobial activity against many microorganisms including *Saccharomyces cerevisiae*, *Candida albicans*, *S. aureus*, and *E. coli*.<sup>24</sup> The methanolic extract from *A. annua* is the substance that possesses its anti-inflammatory property. The triterpenoids, flavonoids, polyphenols, and coumarins present in the plant extract inhibit development of edema.<sup>24</sup> Traditional Chinese medicine utilizes the

immunosuppressive activities of sweet wormwood for treatments of autoimmune diseases such as systemic lupus erythematosus and rheumatoid arthritis.<sup>24,25</sup>

### Comfrey root (*Symphytum* spp)

“Comfrey root (*Symphytum* spp.) has been recorded in use since AD 50 as a vulnerary and anti-inflammatory for wounds, joint disorders, bruises, sprains, pulled muscles and ligaments, inflammations, hemorrhoids and bone fractures.”<sup>26</sup> Comfrey is derived from the Latin words “to grow together.”<sup>6</sup> The pharmacological effects of comfrey are not well known. Comfrey root contains allantoin, which increases cell proliferation, rosmarinic acid, which is an anti-inflammatory constituent, polysaccharides that provide a local soothing effect, and tannins, which have astringent properties.<sup>26</sup> Glycopeptides, which have been isolated from the root, have demonstrated anti-inflammatory activity, and crude juices from the leaves have shown the ability to increase the number of fibroblasts and collagen fibers.<sup>26</sup>

Comfrey also contains low levels of pyrrolizidine alkaloids, which have demonstrated carcinogenic effects.<sup>26</sup> Five individual cases of hepatotoxic reactions have been associated with ingestion of comfrey in humans.<sup>26</sup> The leaves of comfrey contain lower pyrrolizidine alkaloids than the root. With these lower levels of pyrrolizidine, no adverse events have been reported with the external use of comfrey.<sup>26</sup>

### White oak bark (*Q. alba*)

“White oak bark (*Quercus alba*) has been used as an herbal remedy for centuries.”<sup>15</sup> White oak bark contains 15% to 20% tannins that have strong antiseptic properties. These properties form a protective layer of surface proteins that reduce permeability and secretions.<sup>6,15</sup> By reducing permeability and secretions, infection is prevented from proliferating and advancing in the wound.<sup>15</sup> White oak bark also has a hemostatic effect, allowing it to stop bleeding when applied topically. This plant is also known as one of the strongest natural astringents available and provides relief for pruritus.<sup>10,15</sup>

### Indian tobacco (*L. inflata*)

“Indian tobacco (*Lobelia inflata*) is named after Matthias de Lobel, a native of Lille who died in London in 1616.”<sup>27</sup> Lobel was a French physician and



botanist, who was active in the court of King James I.<sup>28</sup> The specific name *inflata* is derived from its inflated seed pods.<sup>28</sup> This herb acquired the common name Indian tobacco because the Native Americans of the Penobscot tribes smoked the dried leaves as a substitute for tobacco.<sup>28</sup> In 1773, Dr Samuel Thompson discovered its ability to produce vomiting and in 1791, he discovered its potential to provide relief for diseases such as colic, rheumatism, and fever.<sup>28</sup> Thompson used *Lobelia* for the treatment of asthma during 1805 to 1809, thus making *Lobelia* one of the most medically important plants during the 19th century.<sup>28</sup> However, *Lobelia* also has the potential to be a deadly poison when used in large quantities.<sup>28</sup>

Lobeline is the most biologically active alkaloid in *Lobelia* plants.<sup>28</sup> Lobeline is known as a powerful respiratory stimulant, with the ability to relax the tissues.<sup>28</sup> Lobeline has also been reported as a useful intervention to treat dependency on drugs such as cocaine, amphetamine, caffeine, phencyclidine, opiates, barbiturates, benzodiazepines, cannabinoids, hallucinogens, alcohol, and especially nicotine.<sup>28</sup> This plant has been shown to have beneficial effects on central nervous system diseases, and has the ability to improve memory.<sup>28</sup> Furthermore, *Lobelia* has the potential to soothe sore muscles and can be used to treat muscle spasms and earaches when used in tincture form.<sup>10</sup>

## Glycerin

Glycerin was discovered by Scheele in 1779 as the residual of the manufacturing of lead plaster.<sup>29</sup> It was known in its pure state after Richard Albert Tilghman invented and patented the product in 1854.<sup>29</sup> Glycerin was first introduced into medical use by T. De La Rouche in 1844.<sup>29</sup> Glycerin is able to absorb the moisture that is exposed to it, and it has strong antiseptic properties.<sup>29</sup> When utilized on the skin, glycerin is unirritating and provides a mildly stimulating effect to wounds and ulcers.<sup>29</sup> Glycerin primarily is used as a carrier agent for other medications, and can work as a softening agent for the skin with potential protective effects.<sup>6,29</sup>

## Beeswax

Beeswax is a complex multicomponent material, consisting primarily of alkanes, wax esters, and free fatty acids.<sup>30</sup> Beeswax is often used for many pharmaceutical, cosmetic, and food purposes.<sup>31</sup>

“Beeswax acts as a barrier to prevent fluid loss during the exudative phase of healing while at the same time acting as a barrier to fluids and foreign materials (urine, stool) penetrating through the ointment.”<sup>15</sup>

## Myrrh (*Commiphora* spp)

Myrrh (*Commiphora* spp) has been utilized in health care for many centuries. Dioscorides includes myrrh in his herbal *De Materia Medicis*.<sup>15</sup> Wine makers in the Middle East had known that adding myrrh to wine would prevent it from being ruined by bacteria before the birth of Christ.<sup>15</sup> During the fourth-century BC, myrrh was commonly used to treat wounds and sepsis.<sup>15</sup> Currently, myrrh is utilized as a fragrance in cosmetics and as a flavoring agent in foods, beverages, and toothpastes.<sup>15</sup> Myrrh gained Federal Drug Administration approval for food use and has a status of “generally recognized as safe.”<sup>15</sup> Myrrh has been utilized in many infectious disease treatments including leprosy and syphilis.<sup>15</sup> Chinese medicine uses myrrh to manage a variety of skin and mouth infections.<sup>15</sup> Many lotions have been prepared with myrrh and are utilized as cleansing agents, moisturizers, skin lesion treatments, and fragrances.<sup>15</sup>

## B&W OINTMENT AND BURDOCK LEAVES FOR TREATMENT OF BURNS

The B&W ointment is beneficial to burn treatment as it contains all the natural ingredients described above, many of which have been used throughout time for burns and different wounds. The practice of B&W ointment and burdock (*A. minus*) leaf dressings consists of applying B&W ointment over the burned area of skin in a consistent layer, followed by covering the ointment with the burdock leaves and securing everything with a gauze wrap.<sup>6</sup> Before using the leaves, the thick central vein is removed, and then the burdock leaves are steeped in hot water to make them pliable to serve as the nonstick dressing.<sup>6</sup> If a patient would present with contact dermatitis from the use of burdock leaves, Keim suggests the use of grape leaves as an acceptable alternative.<sup>6</sup> The Amish firmly believe that the leaves and ointment contribute to wound healing.<sup>6</sup> They further declare that this therapy “practically eliminates pain while dressings are in place and during the dressing changes.”<sup>6</sup> The Amish utilize this therapy for treatment of all levels of burns (first to third degree). However, in a systematic review

examining honey dressings for burns, findings indicated that honey dressings may reduce healing time in partial-thickness burns, but can delay healing time as compared with excision and grafting in the treatment of full-thickness burns.<sup>12</sup>

The Amish have flourished as a culture in the United States. Descendants from European Alastian Anabaptists, their devout religious beliefs continue to shape their lives in the United States. Their approach to health care is rooted in natural and home remedies, only utilizing conventional medicine as a last resort. Divine guidance led John Keim, an Amish healer, to develop B&W ointment and apply burdock leaves for the treatment of burns. The Amish community then adopted this therapy as their primary treatment for burns. Many hospitals have now begun to work with the Amish healers during the treatment of severe burns to Amish community members. By allowing the Amish to apply natural remedies such as B&W ointment and burdock leaves, in conjunction with a conventional approach to the treatment of burns, Amish patients are able to receive the most culturally competent care, further allowing conventional and natural medicine to work in harmony.

## NEED FOR FURTHER RESEARCH

Many of the ingredients found within B&W ointment have supporting research that demonstrates their clinical relevance for skin care. However, B&W ointment as a whole has not been fully researched to demonstrate its efficacy in burn treatment. Therefore, research needs to be conducted to validate the use of B&W ointment and burdock leaves for the treatment of burns.

## REFERENCES

- Association of Statisticians of American Religious Bodies. 2012 2010 U.S. religion census: Religious congregations & membership study Association of Statisticians of American Religious Bodies. 2010 U.S. Religion Census: Religious Congregations & Membership Study. Washington, DC: U.S. Government Printing Office; 2012.
- Caldwell E. 20120730 Estimate's a new Amish community is founded every 3 1/2 weeks in U.S. Caldwell E. Estimate's a new Amish community is founded every 3 1/2 weeks in U.S. *Research and Innovation Communications*. <http://researchnews.osu.edu/archive/amishpop.htm>. Published July 30, 2012. Accessed May 27, 2014.
- Hostetler JA, Amish Hostetler JA. *The Amish*. Scottsdale, PA: Herald Press; 1995.
- Kraybill DB. Riddle of Amish Culture Kraybill DB. *Riddle of Amish Culture*. Baltimore, MD: Johns Hopkins University Press; 2001.
- Kahn SA, Demme RA, Lentz CW. Mortality after treating severe burns with traditional Amish home remedies: a case report, literature review and ethical discussion. *Burns*. 2013;39:e13-e16.
- Kolacz NM, Jaroch MT, Bear ML, Joel Pomerene Hospital Hess R F Research for Health Inc. The effect of burns & wounds (B&W)/burdock leaf therapy on burn-injured Amish patients: a pilot study measuring pain levels, infection rates and healing times. *J Holistic Nurs*. 2014;32(4):327-340. doi:10.1177/0898010114525683.
- Rieman MT, Neely AN, Boyce ST, Kossenjans WJ, Durkee PJ, Zembrodt J, MKagan RJ. Amish burn ointment and burdock leaf dressing: assessments of antimicrobial and cytotoxic activities. *J Burn Care Res*. 2014;35(4):e217-e223. doi:10.1097/BCR.0b013e3182a23228.
- Ember CR, Ember M. Encyclopedia of medical anthropology: Health and illness in the world's cultures topics-volume 1; cultures-, volume 2. *The Encyclopedia of Medical Anthropology: Health and Illness in the World's Cultures*. Vol. 2. Springer; 2003. <http://search.credoreference.com/content/entry/sprmedanth/amish/07>. Accessed April 15, 2014.
- Main ME, Williams D, Jones MS. 2012 Treatment of burns with burns & wounds (B&W) ointment and leaf therapy. In: Ignatavicius DD, Workman ML, eds. *Medical-Surgical Nursing: Patient-Centered Collaborative Care*. St Louis, MO: Saunders Elsevier; 2010.
- Main ME, Williams D, Jones MS. Treatment of burns with burns & wounds (B&W) ointment and leaf therapy. *J Altern Complement Med*. 2012;18(2):109-111. doi:10.1089/acm.2011.0416
- Chan YS, Cheng LN, Wu JH, et al. A review of the pharmacological effects of *Arctium lappa* (burdock). *Inflammopharmacology*. 2011;19:245-254. doi:10.1007/s10787-010-0062-4
- Jull AB, Walker N, Deshpande S. Honey as a topical treatment for wounds (review). *Cochrane Collaboration (CD005083)*. 2013;2:1-95. Accessed May 19, 2014.
- Mandal MD, Mandal S. Honey: its medicinal property and antibacterial activity. *Asian Pac J Trop Biomed*. 2011;1(2):154-160. doi:10.1016/S2221-1691(11)60016-6.
- Stone L. Medilan: a hypoallergenic lanolin for emollient therapy. *Br J Nurs*. 2000;9(1):54-57.
- Finneran M. *Summary Review of Pharmacological Makeup of Regena Derm (Unpublished Monograph)*. Wooster, OH; 2012.
- Visioli F, Galli C. Biological properties of olive oil phytochemicals. *Crit Rev Food Sci Nutr*. 2002;42(3):209-221.
- Natural Standard. 2013 Fermented wheat germ extract Gurfinkel R, Palivatkel-Naim M, Gleisinger R, Rosenberg L, Singer AJ. Comparison of purified olive oil and silver sulfadiazine in the treatment of partial thickness porcine burns. *Am J Emerg Med*. 2012;30:79-83.
- Natural Standard. Fermented wheat germ extract. <http://www.naturalstandard.com.ezproxy2.library.drexel.edu/tools/handouts/hsf/patient-fwge.asp#attribution>. Published 2013. Accessed May 19, 2014.
- Megahed M. Study on the stability of wheat germ oil and lipase activity of wheat germ during periodical storage. *Agric Biol J North Am*. 2011;2(1):163-168. doi:10.5251/abjna.2011.2.1.163.168.
- Drake MW, Madeira LM, Szeto TH, Julian KC. Transformation of *Althaea officinalis* L. by *Agrobacterium rhizogenes* for the production of transgenic roots expressing the anti-HIV microbicide cyanovirin-N. *Transgenic Res*. 2013;22:1225-1229. doi:10.1007/s11248-013-9730-7.
- Grieve M. Modern herbal: Marshmallows Grieve M. Marshmallows. A Modern Herbal. 2014. <http://λαχινατοβ.com/botanical/mgmh/m/mallow07.html>. Published 2014. Accessed May 19, 2014.
- Sharrif Moghaddasi M. Aloe vera chemicals and usages. *Adv Environ Biol*. 2010;4(3):464-468.
- Surjushe A, Vasani R, Saple DG. Aloe vera: a short review. *Indian J Dermatol*. 2008;53(4):163-166.
- Das S. *Artemisia annua* (Qinghao): a pharmacological review. *Int J Pharm Sci Res*. 2012;3(12):4573-4577.
- Lachenmeier DW. Wormwood (*Artemisia absinthiu*): a curious plant with both neurotoxic and neuroprotective properties? *J Ethnopharmacol*. 2010;131:224-227. doi:10.1016/j.jep.2010.05.062.

26. Frost R, MacPherson H, O'Meara S. A critical scoping review of external uses of comfrey (*Symphytum* spp.). *Complement Ther Med*. 2013;21(6):724-745. doi:10.1016/j.ctim.2013.09.009.
27. Felpin FX, Lebreton J. History, chemistry and biology of alkaloids from *Lobelia inflata*. Grieve M. *Lobelia. A Modern Herbal*. 2004. <http://λαχινατοβ.com/botanical/mgmh/l/lobeli38.html>. Published 2014. Accessed May 19, 2014.
28. Felpin FX, Lebreton J. History, chemistry and biology of alkaloids from *Lobelia inflata*. *Tetrahedron*. 2004;60:10128-10153. doi:10.1016/j.tet.2004.08.010.
29. Grieve M. 2014 modern herbal: *Lobelia* Hartshorne H 1865 monograph on glycerin and its uses Hartshorne H. *A Monograph on Glycerin and Its Uses*. Philadelphia, PA: J.P. Lippincott & Co; 1865.
30. Buchwald R, Breed MD, Greenberg AR, Otis G. Interspecific variation in beeswax as a biological construction material. *J Exp Biol*. 2006;209:3984-3989. doi:10.1242/jeb.02472.
31. Adamczyk S, Lazaro R, Perez-Arquillue C, Herrera A. Determination of synthetic acaricides residues in beeswax by high-performance liquid chromatography with photodiode array detector. *Anal Chim Acta*. 2007;581(1):95-101. doi:10.1016/j.aca.2006.07.085.