Mistletoe

INTRODUCTION

The mistletoes are hemiparasitic plants that attach to various species of host trees via a rootlike structure known as a haustorium which penetrates the outer bark of tree branches and draw water and nutrients from the tree. Once attached and established the green leaves mistletoes are capable of photosynthesis

The genus *Viscum* – European Mistletoe

The genus Viscum is named for viscin which is a sticky substance found in the berries. You might also see as a name given to the birdlime preparations made with the berries. In an 1803 medical dictionary under the entry "viscum" we find the definition as bird lime prepared from holly, album mistletoe and quernum mistletoe.[1]

The English word mistletoe is thought to be a modernization of the Anglo-Saxon word *mistiltan* which comprised of the root words *mistil* (dung) and tan (*twig*). The plant serves a role as a food plant for birds as mentioned in Otto Brunfels in *Herbarum vivae eicones,*

> *"In winter missel thrushes seek their food from the Mistletoe, but in summer they are caught with it, for bird-lime is commonly made from its bark. Thus, the Mistletoes are both beneficial and harmful to birds."*[2]

I should point out that some historians believe that the Anglo-Saxon word has been misinterpreted in this instance, and that the name is derived simply from the fact that a substance made from the berries glued missel thrushes' toes to branches. In Middle English manuscripts you will commonly see the spelling misselto.

Viscum album exists in several subspecies notably *Viscum album ssp. Album* which is an evergreen form that grows on a wide variety of deciduous trees. In the UK, mistletoe grows mostly on apple trees, linden, and poplar, and less frequently on blackthorn, hawthorn, rowan and willow. *V. album ssp. abietis* grows on fir trees and you will find *V. album ssp. laxum* growing on spruce in parts of Germany, France, and Switzerland.

V. album species contains lectins, viscotoxins, flavonoids, phenolic acids, sterols, lignans, terpenoids,

phenylpropanoids, alkaloids and fatty acids.[3] The clinically relevant constituents of *Viscum album L.* have been identified as various lectins which have a cytotoxic effect on cancer cells.[4] Research of the whole plant extracts show that the whole plant has a greater cytotoxic effect than isolated mistletoe lectins.[5] This is in part because the triterpene constituents such as oleanic acid enhance cellular uptake of these lectins.[6]

American mistletoe plays an important role in it's ecosystem also and while missel thrushes are a European bird, American species such as the flycatchers depend on the plant as a food source in the winter. Other birds such as owls and hawks will use the tangle of plant as nesting material. Butterflies of the hairstreak species rely heavily on the plant and will lay their eggs on the leaves so their larvae have them as a food source after hatching.

HISTORY

History articles and books are full of misinformation about mistletoe and the first thing you will probably come across is that Pliny wrote that the druids of Celtic people held the plant in high esteem, and that they used it in fertility rituals.

What Pliny actually wrote is that the plant was significant to the druids of the Gauls who lived in France. He shared that the Gauls recognized the plant as a cure for barren animals and as an antidote against all poisons, and had an extravagant ritual involved in harvesting it. Pliny also clues us on to a protective the ancients attributed to the plant saying, "This tree has on it a mistletoe similar to that of the oak, which is proof against all injury from either fire or water, in the same manner."[7] This is a theme that comes up often. In Switzerland, a common name of the plant is *donnerbesen* meaning thunder besom and they hung it on houses to protect the home from lightening.

You might also read that mistletoe got its name from the Celtic word for 'all-healing', but what Pliny actually wrote is.

> *"This day (5th of the lunar cycle) they select because the moon, though not yet in the middle of her course, has already considerable power and influence; and they call her by a name which signifies, in their language, the all-healing."*[8]

Here we see that *Omnia sanantem* is the name of the moon in all her potent healing glory, not the plant. That should be interesting to those of you who know Vedic tradition or the legend of the 5th day of the 5th moon celebrating the birthday of Yao Wang.

There is no indication that this was a widespread "Celtic" practice because as we have already established, there is no such thing as a uniform Celtic culture. That is a myth that was first cultivated during the period of romantic nationalism in Europe and was used to market a good deal of pseudohistory publications in the 1990s.

It is particularly unlikely that mistletoe was known to Ireland's early people. Mistletoe is not native to Ireland and does not even naturalize well there. There are fewer than a dozen spots in Ireland where it took hold after Victorian era efforts to grow the plant.

Pliny also didn't think much of the plant as an antidote. In fact, he wrote quite a bit about what to do if you are poisoned by mistletoe. One recommendation was bruising rue and infusing it in wine as an antidote.[9] It made me wonder what was going on that so many people were poisoned by the plant?

I investigated that a little more and found that the berries were widely used to make birdlime[10], which was a sticky substance spread on trees to capture small birds to keep them from eating the fruit. So, it seems that people poisoning their food with pesticides, is has been a problem for longer than we think. This

"In the physician's garden of the Old Man's Hospital, Kilmainham. By what I could learn, the apple tree on which it grows was brought from England." ~ Nathaniel Colgen The Flora of County Dublin County

probably accounts for the fact that it grows so heavily in apple groves.

Another mistletoe myth that does not hold up to scrutiny is the one Frazer originated about it being the "Golden Bough" of Virgil. However, as you can see in the following excerpt, Virgil was clearly comparing the "golden bough" to mistletoe not saying that it was mistletoe.

> *Perch'd on the double tree that bears the golden bough.*
> *Thro' the green leafs the glitt'ring shadows glow;*
> *As, on the sacred oak, the wintry mistletoe,*
> *Where the proud mother views her precious brood,*
> *And happier branches, which she never sow'd."*[11]

The Norse myth that mentions mistletoe is also frequently mistold. According to pre-Christian manuscripts, the god Baldr dreamed he was in danger, so his mother Frigg extracted an oath from fire, water, iron and all metals, stones, the earth, trees, diseases, all animals and birds, poison, snakes, and many other things that they would do him no harm. After that the gods amused themselves by shooting at Baldr, but nothing ever injured him. Loki was disgruntled about this, so he changed his appearance to look like a woman and tricked Frigg into confiding that she hadn't demanded an oath of mistletoe because "it seemed too young" to her. Loki then picked some of the plant and fashioned it into a weapon and tricked the blind Hod into shooting at Baldr who was promptly killed. Balder fell dead to the ground. condition, that all the world weeps for him. poison on him. All of the gods conspired to convince Hel to release Baldr who agreed if all the creation wept tears for him, however one giantess assumed to be Loki in disguise refused and therefor Baldr remained with Hel.[12]

There's no resurrection for Baldr any mention of mistletoe berries is some sort of poetic invention of a later era. Many people who study Norse myth read some sort of lesson into this tale about not underestimating the young, or infirmed. There seem to be local variants in which the gods captured and tortured Loki in order to obtain a tear to secure Baldr's release but many people believe this is a monastic invention meant to reconcile Norse mythology with the Christian mythology. The story of the mistletoe being the *Lignum Sanctae Crucus*, or the wood of the cross that Jesus was crucified on, is probably also this sort of thing.

So why do we hang mistletoe? Culpeper quotes the French botanist Carolus Clusius as saying that hanging mistletoe around your neck wards off witchcraft. As he was of Gaulish ancestry it seems possible that something that survived in the oral narrative there or maybe it was muddled in telephone game fashion after Pliny's statement?

Norse mythologist Benjamin Thorpe mentions that hanging the mistletoe warded off the "nightmare" and that it was also called the *marentakken* because of this.[13] They considered the nightmare to be a disease but as we know better now, I don't put it in the clinical history.

> *THE Night-mare, or, as some call it, the Hag, is a Nocturnal Disease arising from thick Vapours which chiefly obstruct the hinder part of the Brain.*[14]

Whatever the origin, it seemed to have been an old practice ascribed to the ancients by the late 17th century.

> *"Divers things are traditionally delivered, as Preservatives against Witchcraft, wore about us, and offensive to Devils; therefore I believe came Rosemary, Misselto, and Ivy, to be hung up in Houses, because the Antients judged those to defend Houses from evil Spirits."*[15]

How mistletoe became associated with winter decorating is kind of unclear. It could be the simple fact that it was growing and green during the season like this

poem written in 1648 by Robert Herrick seems to imply.

Ceremonies for Candlemasse Eve.
Down with the Rosemary and Bayes,
Down with the Misleto;
In stead of Holly, now up-raise
The greener Box (for show.)
The Holly hitherto did sway;
Let Box now domineere;
Untill the dancing Easter-day…"[16]

There is a correlation between the plants they used for decorating and those used to ward off evil spirits. So maybe that is the root of the practice?

As an aside this gives me a perfect chance to illustrate how the Victorians took significant liberties with historical documents. Here you can read that same poem credited to Herrick in a volume of work edited in 1891 by Alfred Pollard. This version is often cited as the original. I think I am even guilty of doing so before I read the original.

Ceremony Upon Candlemas Eve
DOWN with the rosemary, and so
Down with the bays and misletoe;
Down with the holly, ivy, all,
Wherewith ye dress'd the Christmas Hall:
That so the superstitious find
No one least branch there left behind:
For look, how many leaves there be
Neglected, there (maids, trust to me)
So many goblins you shall see.[17]

Most people think that the sprig of mistletoe is kind of a toned-down version of the Tudor's Kissing Bough which was a bough that was woven from the supple branches of willow or ash and then decorated with various evergreens.

But not all of the Tudors found it to be endearing. Shakespeare mentions it as "baleful" in his play Titus Andronicus.[18] To understand why history has been subject to so much revisionism, you have to kind of understand the Victorians. Cromwell and his Puritan zealots had put a stop to much of the frivolity that was the medieval life, and London was kind of a drab, dreary place where tradition was kind of waning.

That all changed with the Victorians, who were the first generation to recognize that frivolity is profitable. They invented the department store and soon after their marketing people realized that reviving as many fanciful traditions as they could, drove customers to the shoppes. Old customs were restored or perhaps even given elevated importance and suddenly hanging a sprig of mistletoe became of holiday decorating.[19]

It seems to have been revived by the Victorians. The first time we see it written about is in Washington Irving's *Old Christmas* in which Irving relayed his 1822 visit to an English country manor saying,

"The mistletoe is still hung up in farmhouses and kitchens at Christmas; and the young men have the privilege of kissing the girls under it, plucking each time a berry from the bush. When the berries are all plucked, the privilege ceases."[20]

CLINICAL USE

Now that you a grasp on the mythology, we will move on to the clinical history. The older Loeb translations are especially UK-centric in their conclusions about plants because clearly if it is the most common mistletoe in England, it must be the most common everywhere.

It has been suggested that *Viscum album* is the ἰξός that the Greeks used medicinally. Due to my research, I strongly question that conclusion.

Dioscorides wrote that the medicinal substance birdlime should be collected from the round fruit of the oak-mis-tletoe which was the kind that has leaves like those of box (*Buxus sempervirens*). [21] This leads some people to think that he was speaking of *Loranthus europaeus*, because it grows mostly on oaks in south, central Europe.

Pliny gives us another clue as to which species he used saying that the mistletoe that grows on trees that lose their leaves also loses its leaves [22] which again leads one to believe that he's speaking of *Loranthus europaeus* because it is deciduous which is not true of *Viscum album.* Paulus Aeginata also wrote specifically of mistletoe of oaks.

Pliny lived in the Como province of Italy which is in the north close to Switzerland. It seems plausible then that he would have experienced the variety of *V. album* that grow on evergreens there, and *L. europaeus* growing on oaks and a few fruit trees.

Furthermore, the general theme of use amongst healers of antiquity seemed to be that of drawing out and dispersing suppurating inflammations and you see that usage of the *L. europaeus* berries in Iraqi folk practice modernly. [23] If he was using mistletoe that lost leaves in the winter for that purpose, it seems safe to assume that's what he was using.

I am not sure that it makes a significant difference because the berries of *V. album* seem to have similar properties. I have personally worked with the American berries and would say the same of them.

Dioscorides explained that the medicinal juice of the berries was made by chopping, washing, and then boiling the fresh fruit in water. He used it only in external preparations, suggesting that it be mixed in equal amounts with pine resin and wax and then spread on a linen compress.

I use the berries this way. I think the drawing properties help move along stagnation and help the body resolve the kind of benign cysts that come with old age.

In *De Medicina*, Celsus wrote that Greek physicians used the berries in two preparations that were commonly pre-scribed.

ALLOPHANES
16 gms Turpentine Resin
16 gms Frankincense soot
16 gms Bdellium
16 gms Ammoniacum
16 gms Iris
16 gms Calf or goat suet
16 gms Mistletoe juice

"This composition relieves pain of all kinds, softens indurations (hardenings), and is moderately heating." [24]

Celsus also recommended combining mistletoe juice with ape's dung, untreated sulphur and resin to make an emollient for treating scrofulous tumours and in several other preparations aimed at bringing various types of suppurating skin infections to the surface in order to resolve them. Paulus Aeginata wrote in his *Compendium of Medicine* that mistletoe of oaks produces suppuration or

resolution of strumae[1] which he defined as "indurated glands forming principally in the neck, armpits, and groins."[25]

Ibn Sīnā, the 11th century Persian physician who authored *The Canon of Medicine,* wrote that mistletoe fruit was a "well-known drug" that when used externally removed "thick fluids from deeper parts by absorbing" which I think might be best explained as drawing.[26] As usual he cited older sources, suggesting preparations similar to those listed by Aeginata in his Medical Compendium. He also suggesting mixing the juice with lime for hives and nettle rashes.

Up to this point, we haven't the plant mentioned as something humans should take internally. The first time I have found the internal use mentioned is in the Anglo Saxon *Leechbook Book I* where they mention powdering the plant and adding it to wine as part of the most lengthy and convoluted remedies for shingles I have ever seen.[27] It doesn't seem to be commonly used by the Anglo Saxons though, as I can't find it in the Lacnunga or the Old English Herbarium.

We see a resurgence of interest in mistletoe during the early modern period of European history. Greek and Roman works were

In 1580, Thomas Newton wrote that when combined with incense (one assumes he means frankincense here) that it heals malicious ulcers and that the mistletoe growing on oak is preferred.[28] This is one of the entries that piqued the interest of people researching cancer cures some 400 years later.

Gerard's herbal mentioned that he was aware of people who were bruising a few berries and then straining the juice into an oil to be drank would address an egregious and sore stitch, which is a word used to mean a sudden pain. By the time he wrote this, Europeans had begun to discuss the mistletoe native to the Americas and seem to ascribe similar properties to them as their native mistletoe.

Pietro Andrea Mattioli whom many early modern authors call Mathiolus is credited by Culpeper as being the first to suggest powdering the plant and adding it to wine to be given to people with epilepsy and other convulsive disorders in his *Kreuterbuch desz hochgelehrten unnd weitberühmten* published in 1590. I've also seen it attributed to Paracelsus.

The use of mistletoe seems to be strongly tied to the belief that it repelled evil spirits.

> *Use Specifical Medicines, antipathetical to Daemons, if any be so qualified, and effectually so: Corral, Aetites, Emerods, Rhue, Piony, Rosemary, Misselto, and Birch, were used by the Antients: some of the Antients thought all Convulsions and Epileptick passions, Vertigoes, and Hystericks, to arise from Daemons and Spirits; and tyling these about their necks, and giving them inwardly, they were helped.*[29]

I want to be clear that I don't discount mistletoe remedies' usefulness in these situations. It could easily be a case of the physicians of this era attributing the presentation of a set of physiological symptoms to the wrong causes. I mean even doctors today confuse correlation with causation.

Normally I talk a lot more about women's manuscripts. Mistletoe is a remedy more often found in the casebooks of the sixteenth century or in books which record information about diseases and treatments. Casebooks of the period are extraordinarily interesting, have been woefully underutilized as primary sources of

[1] A lot of the 20th century translations of older works assume that hardened glands instantly meant scrofula, but that's too limited a translation.

information. The herbals might inform us of the basic thinking about the materia medica, but the casebooks show us how that thinking was put into practice.

In 1719, Sir John Colbatch, a prominent member of the Royal College of Physicians wrote a "Dissertation Concerning Mistletoe," that summarized the usefulness of medicinal preparations made with mistletoe as anti-convulsant agents by summarizing the information about mistletoe in various published casebooks.

He credits his friend Dr. William Cole as one of the first who experimented with mistletoe as an anti-convulsant saying he had been "encouraged by the common Voice of Antiquity." He shared a case study of Coles' who wrote that a patient's convulsive fits ceased after he "took care that Misletoe of the Oak should be given him twice a day, with some Cephalick[2] Vehicle."

Once again we find people being extremely specific about the type of mistletoe to use, citing an time when using it had failed to produce a cure because:

> *"no Misletoe of the Oak being to be procured, all other Misletoe was look'd upon as despicable; and the reason why the Pulvis de Guttetâ did no good, was judg'd to proceed from the Apothecaries making use of common Misletoe in the Composition of it, inJstead of that of the Oak."*

This use was well known enough that it 1734 it jumped the pond so to speak and you see John Tennant writing of the powder of misleto in his regime for epileptic people.[30]

I think perhaps my favorite recommendation from the 17th century is in Thomas Willis' *The London Practice of Physick* where he recommends a distillation containing mistletoe (growing on apples) in a formula in his chapter titled "Prescripts for the cure of Stupidity or Folly."[31]

You might read of its long history as a fertility herb but that's you really don't find much about its use in gynecology or obstetrics until the 19th century. It's actually an interesting puzzle to me because mistletoe doesn't show up in the compendium of literature written by the female practitioners of the Salernitan college known as *The Trotula*. Nor does it show up in Jane Sharp's *The Midwives Book* (1671). Women just weren't writing about it.

I did find a few references to a 'Sal Uterinum' in some early translations of alchemical manuscripts.[32] That wasn't likely to be common knowledge. Most alchemists kept to themselves about their work because even back then most scientists were skeptical, and the Church frowned on it. Isaac Newton dabbled in alchemy but most of his work on the subject was published posthumously, because he wanted colleagues with whom he was friendly like Robert Boyle who introduced Boyle's Law to chemistry and Robert Hooke who viewed the first microorganism to take him seriously.

I generally do not think a lot of 18th century US herbals. They are mostly regurgitated information from European herbals printed in the late 17th century, so it's exciting for me when I see something new come into the materia medica. In this case I am talking about the American mistletoe which was first called *Viscum flavescens* and Linnaeus renamed as *Phoradendron flavescens*.

From the start physicians recognized that the American species contained the viscin (birdlime) of Pliny and were recommending fluid extracts of the dried leaf for conditions similar to those mentioned previously such as pain,

[2] Cephalick is a term used for agents that effect the head. Cephalick preparations often line up with those that we modernly think of as crossing the blood brain barrier.

epilepsy and as an antispasmodic for nervous conditions.[33] In 1886 Parke Davis citing a physician Dr W.H Long, began to suggest the fluid extract as an oxytocic which caused "intermittent contractions that can be used at any stage of labor" and to address post-partum hemor-rhage in a way similar to ergot fluid extracts from which methergine is still derived today. The dosage recom-mended was 2-4 cc given every 20 minutes during la-bor.[34] This suggestion was likely copied from the 15th edition of the Dispensatory of the United States of America published in 1883 that had expanded on that saying he gave a similar dosage every 6 hours for menor-rhagia.[35].

During the early 20th century there was a revived interest in the medicinal uses of the plant with a focus on cardiovascular effects. Viscotoxins have been demonstrated to have a fleeting hypotensive effect accompanied by increased heart/respiration rate. Two physicians from Stanford proposed that American mistletoe *(Phoradendron flavescens)* acted as a circulatory depressant in a similar manner to European mistletoe.[36]

Ita Wegman was the first physician of the modern era to work with *V. album* extracts as adjuncts for cancer patients in 1927.[37] She was an anthroposophical physician who worked with Rudolph Steiner, who is often given credit for discovering this use. So say her name with me and don't forget it.

I like to think Wegman and I are kindred spirits in that she once mentioned in an interview that she got the idea to try mistletoe based on reading historical materia medica documents.

Modernly, researchers have identified at least three different type of conjugate lectin molecules with an A chain that has enzymatic actions and a B chain that is a lectin.[38] These molecules have been shown to impede the ribosomes of a cell from synthesizing proteins in the cell. Most of this research is in vitro research of varying quality levels. Recently a systemic review concluded that there is a "indicate a statistically significant and clinically valuable improvement of the subjective well-being of patients with different types of cancer after the treatment with VAE."[39]

ISCADOR Qu™ is one mistletoe extract that has been standardized and used in clinical trials across Europe and both this extract and purified mistletoe lectin were shown in a clinical trial to stimulate the production of cytokines when applied topically IL-5 and IFNγ and a cytokine that is known for stimulating stem cells to produce monocytes that eventually mature into macrophages as well enhancing the migration of neutrophils, eosinophils, and basophils.[40]

This type of isolated constituent research that overlooked the whole plant effect is very typical of the 1990's. Viscotoxins, which we previously discussed are thionins which as a class have been shown to create pores in cellular membranes and increase cellular permeability. The triterpene acids that are also present in the plant seem to increase a cells uptake of the conjugate lectin molecules.[41] So there's a whole plant effect here.

What needs to be made crystal clear here is that the research discusses mistletoe extract as an adjunct to conventional treatments. Mistletoe seem to lessen the side effects and have some immunostimulating effects.[42] It has never been used as a standalone treatment for cancer.

Most recently the research has come full circle and mistletoe is once again being investigated for various central

nervous systems disorders associated with tremor and r Alzheimer's disease.[43]

FORMULATION CONSIDERATIONS

The most important thing to keep in mind if you decide to work with mistletoe is that it can be poisonous to humans. This has been documented since antiquity. There are known cases of liver damage associated with ingestion of the plant.[44] It is also rumored to have been used to provoke abortions due to oxytocic properties.[45] The point is that this is a low dose plant, and you should be overly cautious if you choose to use incorporate the plant into your materia medica.

The mistletoe lectins are ribosome inactivating proteins which means that they bind with surface carbohydrates to enter a cell and inhibit protein synthesis by ribosomes in the cell. This cytotoxicity is nonspecific which means that it can act on healthy cells as well as diseased cells. It can be overdone. So, while you might use this as a topical application for zeroing in on a specific spot, the plants chemical properties do not make it well suited for general healing ointments. Because the aqueous extracts of mistletoe seem to be most efficient, I have used them to make unguents in a style like that of making Ayurvedic oils with decoctions.

Harvesting time makes a difference as to chemical composition. Viscotoxins are most concentrated in the spring as well the chemicals that produce antioxidant activity[46] while you will want to harvest the plant in December for optimal lectin content.

Lectins are proteins and therefore heat sensitive because proteins denature in heat and to a lesser degree in alcohol. Cold water decoctions or capsules of the dried leaves are probably the best preparation method.

You can make a double extract similar to the way we make preparations from medicinal mushrooms, but I just do a cold-water infusion. I also avoid including the berries in these preparations as berries tend to be more toxic than the leaves.

As my family tree includes midwives who practiced in the late 19th century and early 20th century, I was aware of mistletoe being used to address post-partum hemorrhage. It is kind of an interesting side not for me to point out that herbs that I grew up thinking of as practical midwifery herbs were "paganized", for want of a better term. Mugwort would be another example, and I talk about this more in that chapter.

Please don't get the idea that mistletoe is useful for all types of bleeding, though. Oxytocic agents work by causing the uterus to clamp down and staunch uterine bleeding. Due the toxicity, it is an emergency use only, and it's a poor substitute for oxytocin. So, mistletoe could theoretically be used for emergency control of postpartum hemor-rhage or some sort of uterine trauma, but I would not put it in a formula for a chronic disorder.

REFERENCES

[1] Fox (M.D.), Joseph. A New Medical Dictionary ... Revised and Augmented by T. Bradley, 1803.

[2] Brunfels, Otto, Johann Schott, and Hans Weiditz. *Herbarum viuae eiconeb [sic] ad naturę imitationem: sum[m]a cum diligentia et artificio effigiatę, unà cum effectibus earundem, in gratiam ueteris illius, & jamjam renascentis herbariae medicinae.* Argentorati: Apud Joannem Schottu[m, 1530.

[3] Szurpnicka, Anna, Anna Kowalczuk, and Arkadiusz Szterk. 'Biological Activity of Mistletoe: In Vitro and in Vivo Studies and Mechanisms of Action'. *Archives of Pharmacal Research* 43, no. 6 (1 June 2020): 593–629. https://doi.org/10.1007/s12272-020-01247-w.

[4] Schramm, Henning M. 'The Anti-Cancer Activity of Mistletoe Preparations, as Related to Their Polyphenolic Profiles'. In *Mistletoe: From Mythology to Evidence-Based Medicine*, edited by Zanker, KS and Kaveri, SV, 4:15, 2015.

[5] Eggenschwiler, Jenny, Leopold von Balthazar, Bianca Stritt, Doreen Pruntsch, Mac Ramos, Konrad Urech, Lukas Rist, A Paula Simões-Wüst, and Angelika Viviani. 'Mistletoe Lectin Is Not the Only Cytotoxic Component in Fermented Preparations of Viscum Album from White Fir (Abies Pectinata)'. BMC Complementary and Alternative Medicine 7 (10 May 2007): 14. https://doi.org/10.1186/1472-6882-7-14.

[6] Mulsow, Katharina, Thomas Enzlein, Catharina Delebinski, Sebastian Jaeger, Georg Seifert, and Matthias F. Melzig. 'Impact of Mistletoe Triterpene Acids on the Uptake of Mistletoe Lectin by Cultured Tumor Cells'. PLOS ONE 11, no. 4 (18 April 2016): e0153825. https://doi.org/10.1371/journal.pone.0153825.

[7] Plin. Nat. 13.39

[8] Plin. Nat. 16.95

[9] Plinius Secundius, Gaius. *The Natural History of Pliny*. Translated by Bostock, John. 1856 Translation. Vol. IV. Bohn's Classical Library. London, England: H. G. Bohn, 77. pp 253.

[10] Plin. Nat. 16.94

[11] Drage, William. *Daimonomageia a Small Treatise of Sicknesses and Diseases from Witchcraft, and Supernatural Causes : Never before, at Least in This Comprised Order, and General Manner, Was the like Published : Being Useful to Others besides Physicians, in That It Confutes Atheistical, Sadducistical, and Sceptical Principles and Imaginations.* . London, England: Printed by I. Dover, living in St. Bartholomews-Close, 1665.

[12] Sturluson, Snorri. EDDA. Translated by Faulkes, Anthony. London, UK: Everyman: J.M. Dent, 1992. pp 48.50.

[13] Thorpe, Benjamin. Northern Mythology: *Comprising the Principal Popular Traditions and Superstitions of Scandinavia, North Germany, and the Netherlands.* Vol. 1. III vols. London: E. Lumley, 1852. http://archive.org/details/northernmytholog03thor.

[14] Physician. *A Treatise of Diseases of the Head, Brain, and Nerves: More Especially of the Palsy, Apoplexy, ... To Which Is Subjoin'd, A Discourse of the Nature, Real Cause and Certain Cure of Melancholly in Men, and Vapours in Women*: ... By a Physician. London, England: Printed, and sold by the author's appointment, at the Two Blue Posts, 1721.

[15] Drage, William. *Daimonomageia a Small Treatise of Sicknesses and Diseases from Witchcraft, and Supernatural Causes: Never before, at Least in This Comprised Order, and General Manner, Was the like Published : Being Useful to Others besides Physicians, in That It Confutes Atheistical, Sadducistical, and Sceptical Principles and Imaginations.* London, England: Printed by I. Dover, living in St. Bartholomews-Close, 1665. http://name.umdl.umich.edu/A36504.0001.001.

[16].Herrick, Robert. *Hesperides, or, The Works Both Humane & Divine of Robert Herrick, Esq.* London, England: Printed for John Williams and Francis Eglesfield, 1648. pp 337.

[17] Herrick, Robert. *Works of Robert Herrick*. vol II. Alfred Pollard, ed. London, Lawrence & Bullen, 1891. 129.

[18] Shakespeare, William. 'Titus Andronicus'. Accessed 28 December 2020. http://shakespeare.mit.edu/titus/full.html.

[19] Phillips, Henry. *Floral Emblems*. London, England: Saunders and Otley, 1825. pp 52.

[20] Irving, Washington, Old Christmas.

[21] Dioscorides Pedanius. *De Materia Medica*. Translated by Beck, Lily. 2005 Translation. New York: Olms-Weidmann, ca. 65. pp 223.

[22] Plin. Nat. 16.93

[23] Sharquie, Khalifa E., et. al. 'Topical 40% Loranthus Europaeus Ointment as an Alternative Medicine in the Treatment of Acute Cutaneous Leishmaniasis versus Topical 25% Podophyllin Solution'. *Journal of Cosmetics, Dermatological Sciences and Applications* 7, no. 2 (20 June 2017): 148–63. https://doi.org/10.4236/jcdsa.2017.72013.

[24] Celsus, Aulus Cornelius. *De Medicina LIBRI V and VI*. Translated by Spencer, W.G. 1938 Translation. Vol. II. III vols. London, England: Loeb Classical Library, ca. 45. pp. 20.

[25] Aegineta, Paulus, Paulus. *Medical Compendium in Seven Book*s. Translated by Adams, Francis. 1847 Translation. Vol. II. III vols. London, England: Sydenham Soc., 600. pp. 92.

[26] Sīnā, Ibn. *Canon of Medicine Book II: Materia Medica*. 1998 Translation. Vol. 2. 5 vols. New Delhi, India: *Department of Islamic Studies*, 1025. pp 206.

[27] Cockayne, Thomas Oswald. Leechdoms, Wortcunning, and Starcraft of Early England. Being a Collection of Documents, for the Most Part Never before Printed, Illustrating the History of Science in This Country before the Norman Conquest. Vol. 2. London: Longman, Green, Longman, Roberts, and Green, 1864. pp 87.

[28] Newton, Thomas, 1542? *Approoved Medicines and Cordiall Receiptes with the Natures, Qualities, and Operations of Sundry Samples. Very Commodious and Expedient for All That Are Studious of Such Knowledge.* Imprinted at London: In Fleete-streete by Thomas Marshe. 1580.

[29] Drage, William. *Daimonomageia a Small Treatise of Sicknesses and Diseases from Witchcraft, and Supernatural Causes : Never before, at Least in This Comprised Order, and General Manner, Was the like Published : Being Useful to Others besides Physicians, in That It Confutes Atheistical, Sadducistical, and Sceptical Principles and Imaginations.* . London, England: Printed by I. Dover, living in St. Bartholomews-Close, 1665.

[30] Tennant, John. *Every Man His Own Doctor, Or, The Poor Planter's Physician*. 2nd ed. Williamsburg, MD: William Parks, 1734. pp 24.

[31] Willis, Thomas. *The London Practice of Physick, or, The Whole Practical Part of Physick Contained in the Works of Dr. Willis Faithfully Made English, and Printed Together for the Publick Good.* London, England: Printed for Thomas Basset, at the George in Fleet-street, and William Crooke, at the Green-Dragon without Temple-Bar, 1685. pp 493.

[32] Mynsicht, Adrian von. *Thesaurus & Armamentarium Medico-Chymicum, or, A Treasury of Physick with the Most Secret Way of Preparing Remedies against All Diseases : Obtained by Labour, Confirmed by Practice, and Published out of Good Will to Mankind : Being a Work of Great Use for the Publick / Written Originally in Latine by ... Hadrianus à Mynsicht ...; and Faithfully Rendred into English by John Partridge ...* Translated by Partridge, Iohn. London, England: Printed by I. M. for Awnsham Churchill at the Black Swan near Amen Corner, 1682.

[33] Oldberg, Oscar, and Otto Augustus Wall. *A Companion to the United States Pharmacopoeia: Being a Commentary on the Latest Edition of the Pharmacopoeia, and Containing the Descriptions ... of All Official and Numerous Unofficial Drugs and Preparations in Current Use in the United States* ... W. Wood, 1884. pp. 763-764.

[34] Company, Parke, Davis &. An Epitome of the Newer Materia Medica, Standard Medicinal Products, and Fine Pharmaceutical Specialties. Parke, Davis, 1880. pp. 29.

[35] Wood, George Bacon, Franklin Bache, Horatio Charles Wood, Joseph Price Remington, Samuel Philip Sadtler, Charles Herbert LaWall, and Arthur Osol. The Dispensatory of the United States of America. 15th ed. Grigg & Elliot, 1883.

[36] Hanzlik, P.J., and French, W.O. 'The Pharmacology of Phoradendron Flavescens (American Mistletoe)'. *The Journal of Pharmacology and Experimental Therapeutics* 23 (1924): 269–306.

[37] Ramm, Hartmut. 'Mistletoe through Cultural and Medical History: The All-Healing Plant Proves to Be a Cancer-Specific Remedy'. *Mistletoe: From Mythology to Evidence-Based Medicine* 4 (2015): 1–10. https://doi.org/10.1159/000375421.

[38] Franz, Hartmut, Peter Ziska, and Annemarie Kindt. "Isolation and properties of three lectins from mistletoe (Viscum album L.)." *Biochemical journal* 195, no. 2 (1981): 481-484.

[39] Loef, Martin, and Harald Walach. 'Quality of Life in Cancer Patients Treated with Mistletoe: A Systematic Review and Meta-Analysis'. *BMC Complementary Medicine and Therapies* 20, no. 1 (2020): 227. https://doi.org/10.1186/s12906-020-03013-3.

[40] Huber, R, M Rostock, R Goedl, R Lüdtke, K Urech, S Buck, and R Klein. 'Mistletoe Treatment Induces GM-CSF and IL-5 Production by PBMC and Increases Blood Granulocyte and Eosinophil Counts: A Placebo Controlled Randomized Study in Healthy Subjects'. EUROPEAN JOURNAL OF MEDICAL RESEARCH, 2005, 8.

[41] Mulsow, Katharina, Thomas Enzlein, Catharina Delebinski, Sebastian Jaeger, Georg Seifert, and Matthias F. Melzig. 'Impact of Mistletoe Triterpene Acids on the Uptake of Mistletoe Lectin by Cultured Tumor Cells'. PLOS ONE 11, no. 4 (18 April 2016): e0153825. https://doi.org/10.1371/journal.pone.0153825.

[42] Loef, M. et al. 2020

[43] Szurpnicka, Anna, Jordan K. Zjawiony, and Arkadiusz Szterk. 'Therapeutic Potential of Mistletoe in CNS-Related Neurological Disorders and the Chemical Composition of Viscum Species'. Journal of Ethnopharmacology 231 (1 March 2019): 241–52. https://doi.org/10.1016/j.jep.2018.11.025.

44 Harvey, J., and D. G. Colin-Jones. 'Mistletoe Hepatitis.' Br Med J (Clin Res Ed) 282, no. 6259 (17 January 1981): 186–87.

[45] Crawford, Albert C. 'The Pressor Action of an American Mistletoe'. Journal of the American Medical Association LVII, no. 11 (9 September 1911): 865–68. https://doi.org/10.1001/jama.1911.04260090087003.

[46] Eggenschwiler, Jenny, Leopold von Balthazar, Bianca Stritt, Doreen Pruntsch, Mac Ramos, Konrad Urech, Lukas Rist, A Paula Simões-Wüst, and Angelika Viviani. 'Mistletoe Lectin Is Not the Only Cytotoxic Component in Fermented Preparations of Viscum Album from White Fir (Abies Pectinata)'. BMC Complementary and Alternative Medicine 7 (10 May 2007): 14. https://doi.org/10.1186/1472-6882-7-14.