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# Evaluating Research Sources within the context of Medieval Cures

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Presented by Lady Isobel of Carnewyth

University of Atlantia Session 112 - February 4, 2023

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# Class Description

Science has changed, but sometimes the results stay the same. In this class, we will focus on some of the challenges involved in learning about Medieval Cures.

Determining source reliability as well as modern investigations into the efficacy of medieval cures will be discussed including translations and primary vs secondary sources. The focus will be primarily on Europe and the Mediterranean for time periods before the Black Plague.

Is the text accurate? Is the cure effective?

# Humoral balance

- Combination of warmth + wetness
- Correspondence with bodily fluids (blood, phlegm, yellow bile, black bile)
- Impact of natural causes on illness vs. spiritual
- Disturbance from food or drink, degree of physical exertion, or changes in environment
- Importance of observation of the patient (fever, urine, breathing, headache, posture, etc.)



# Observational Medicine and Nutrition

I prescribe a regular diet for all people:  
I recommend keeping that diet unless  
it is necessary to change it.

Hippocrates attests that disease may  
result otherwise. A proper diet is one  
of the foremost goals of medicine;  
Attend to your diet, or you foolishly  
direct your other efforts and take care  
of yourself badly.

What kind? what? when? how much?  
how often? where to be given? These  
things a doctor should quickly take  
note of while prescribing a diet.

# Types of Sources

# Primary, Secondary, and Tertiary Sources

Primary Sources: Direct or firsthand, of the same time period

These sources are records of events or evidence as they are **first described or actually happened without any interpretation or commentary**. It is information that is shown for the first time or **original materials** on which other research is based. Primary sources display original thinking, report on new discoveries, or share fresh information.

Examples of primary sources:

Theses, dissertations, scholarly journal articles (research based), some government reports, symposia and conference proceedings, original artwork, poems, photographs, speeches, letters, memos, personal narratives, diaries, interviews, autobiographies, and correspondence.

*<https://crk.umn.edu/library/primary-secondary-and-tertiary-sources>*

*<https://sccollege.edu/Library/Pages/primarysources.aspx>*

*<https://guides.lib.uw.edu/c.php?g=344285&p=2580599>*

# Primary, Secondary, and Tertiary Sources

Secondary Sources: Use primary source as evidence, one or more steps removed

These sources offer an analysis or restatement of primary sources. They often try to describe or explain primary sources. They tend to be works which summarize, interpret, reorganize, or otherwise provide an added value to a primary source.

Examples of Secondary Sources:

Textbooks, edited works, books and articles that interpret or review research works, histories, biographies, literary criticism and interpretation, reviews of law and legislation, political analyses and commentaries.



# Primary, Secondary, and Tertiary Sources

Tertiary Sources: Synthesize works of others

These are sources that index, abstract, organize, compile, or digest other sources. Some reference materials and textbooks are considered tertiary sources when their chief purpose is to list, summarize or simply repackage ideas or other information. Tertiary sources are usually not credited to a particular author.

Examples of Tertiary Sources:

Dictionaries/encyclopedias (may also be secondary), almanacs, fact books, Wikipedia, bibliographies (may also be secondary), directories, guidebooks, manuals, handbooks, and textbooks (may be secondary), indexing and abstracting sources.

# Lost in Translation

# Mediterranean Translation Centers: Preservation and continuation of knowledge

Greek and Latin medical knowledge moved geographically and was expanded on in Persia, Syria, and Arabic caliphates.

Toledo School of Translators returned many classic works and additional philosophical and scientific works from Arabic to Latin including Ibn Sina (Avicenna)'s Canon of Medicine.

Abbey library of Montecassino, School of Salerno key entry points.

Constantine the African Benedictine monk from Carthage, arrived in Salerno in 1077. Translated Galen's and Hippocrates' works into Latin, including anatomical studies from Galen's time in Alexandria in addition to masters of Arabic medicine.

# Manuscript Authorship: loss, copies, modifications

**Herrad's *Hortus Deliciarum*** full manuscript destroyed in the Prussian siege of August 1870. (Strasbourg library), reconstructed by Warsburg Institute 1979. Compilation.

**Hildegard:** collaboration with scribes.

**Anna Comnena:** lack of reference to author's own gender used as proof that *Alexiad* was based on her husband's field notes but writing style has also been ascribed to her gender.

**Héloïse:** critics claim the letters are “anachronistic romanticism,” the controversy goes back to 1806, has been repeatedly disproven with verification of sources.

**Trota of Salerno:** comparison with known works *Practica secundum Trotam* and *De egritudinum curatione* indicates only *Treatments for Women* within the three books of the “*Trotula*” written by Trota (per M. Green).

# Identity and Authorship– Trota

Three books within “*Trotula*,” compiled c.1200:

- *On the Conditions of Women*
- *On Treatments for Women*
- *On Women’s Cosmetics*

Other works by Trota of Salerno c.1100:

- *Practica secundum Trotam*
- *De egritudinum curatione*

*Practica secundum Trotam* (*Practical Medicine According to Trota*) and the Salernitan compendium *De egritudinum curatione* (*On the Treatment of Illnesses*) share passages with each other as well as *Treatments for Women*, suggesting a shared authoritative source of Trota.

*Conditions of Women* contains more Arabic influence and *Women’s Cosmetics* has greater organizational structure, leading Monica Green to conclude that *Treatments for Women* is the most likely written by or on behalf of Trota.

# Salerno Health Regime highlights:

From Arnoldus de Villa Nova's commentary: joyful mind, rest, and a moderate diet.

Wash your hands

Skip noontime naps

Eat seasonally

Walk after dinner

Wine fixes everything- but drink in moderation



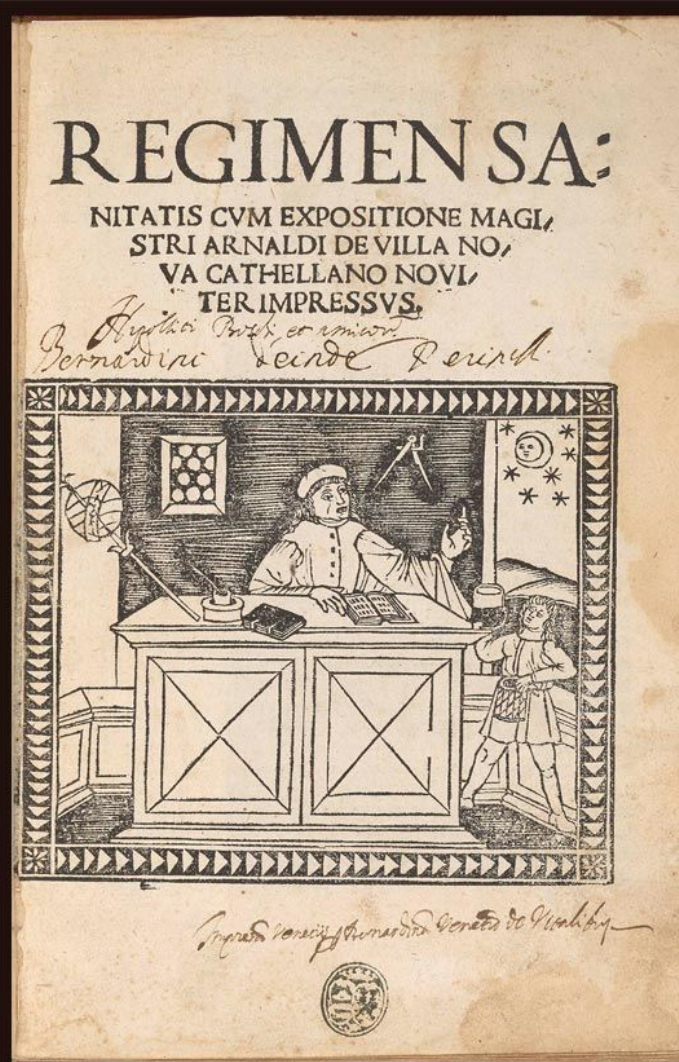
*Regimen sanitatis ad regem Aragonum* (14th century) by Arnaldus de Villa Nova



# Later translations and additions

- Earliest traceable version was 362 lines in a commentary by Arnaldus de Villa Nova (early 14th c. compendium for James II of Aragon)
- Vernacular translations including Irish, Bohemian, Occitan, Hebrew, German, Anglo-Norman, and Italian with nearly forty different editions produced before 1501.
- Commentators added their own “improvements” and recipes.

Regimen sanitatis cum expositione magistri Arnaldi de Villa Nova cathellano  
(Ed. and Com. Arnau de Vilanova [ca. 1240–ca. 1311])



# Later translations and additions – English sources

- 1871 translation in rhyming verse by the American doctor John Ordronaux denotes de Villa Nova's commentary as well as text later added found in his 19th c. source document from Paris.
- 1976 translation by Patricia Cummins (available on Gode Cookery) translates the Latin into modern English prose but does not separate out original text, rather analyzing a “corrected” French version from 1480.
- Sir John Harington's 1608 verse translation likewise converts an “extended” version into contemporaneous English.



# Bloodletting guidelines

Differences in translations

De conservada bona valetudine, scholae Salernitanae  
opusculum. Franc.: Apud Chr. Egenolphum [1553]



# Of Bleeding and of the Age for Bleeding

Phlebotomy is scarcely needed before a person is **seventeen**.

The more productive spirit will escape with your blood during phlebotomy,

But these spirits will soon be replaced by drinking wine, and

Any harm done by the humors will be gradually repaired by food.

Phlebotomy clears your eyes, freshens your

Mind and brain, makes your marrow warm,

Purges your bowels and restrains your stomach and belly from vomiting or menstration;

It purifies the senses, brings on sleep, takes away weariness;

It cultivates and improves hearing, speech, and strength.

Ere **seventeen** years we scarce need drawing blood; High spirits fall by tapping life's own flood. Wine may restore a wonted, joyous mood, But loss of blood is late repaired by food. Bleeding the body purges in disguise, For it excites the nerves, improves the eyes And mind, and gives the bowels exercise. Brings sleep, clear thoughts, and sadness drives away, And hearing, strength and voice augments each day.

# Time of year

These are the good months for phlebotomy -  
May, September, April -  
Which are lunar months just as are the Hydra  
days.

**Neither on the first day of May nor the last  
day of September or April**

Should blood be drawn or goose be eaten.

In the old man or in the young man whose  
veins are full of blood

Phlebotomy may be practiced in every month.

These are the three months - May, September,  
April -

In which you should draw blood in order to live  
a long time.

Called lunar, are September, April, May,  
Because they move beneath the Hydra's  
sway. **Two days - September first, May  
thirty-first-** for bleeding and for eating  
goose are cursed. When blood abounds in  
full age or in youth, May'est bleed in any  
lunar month, forsooth; Yet chiefly in  
September, April, May, Bleed freely if you  
would prolong life's day.

# Of Obstacles to Bleeding

Cool constitution, a cold region, great pain,

**Bathing, sexual intercourse,** youth and old age,

Long illness, heavy drinking, and eating - if you are in one of these situations

Or if you are nauseous, then phlebotomy is not good for you.

Cold nature, clime, or when some sharp pain laces; **And after baths that follow love's embraces;** In youth, old age, amid disease's traces; Or when of food a surfeit overplies The stomach, and to constant qualms gives rise, Then letting blood is truly most unwise.

# Latin translation differences: *Fac plagam largam mediocriter*

Make the wound rather large...

(PWC, 1976)

Make your incision large, and not too deep...

(Harrington 1608)

A medium-sized incision always make...

(JO 1871)



The Bloodletting of Young Maiden, 1472. Schürstab Codex (parchment), Ms. C 54, f. 40r (detail), Zentralbibliothek - Zürich, Switzerland

Cure Efficacy:  
modern  
scientific  
investigations

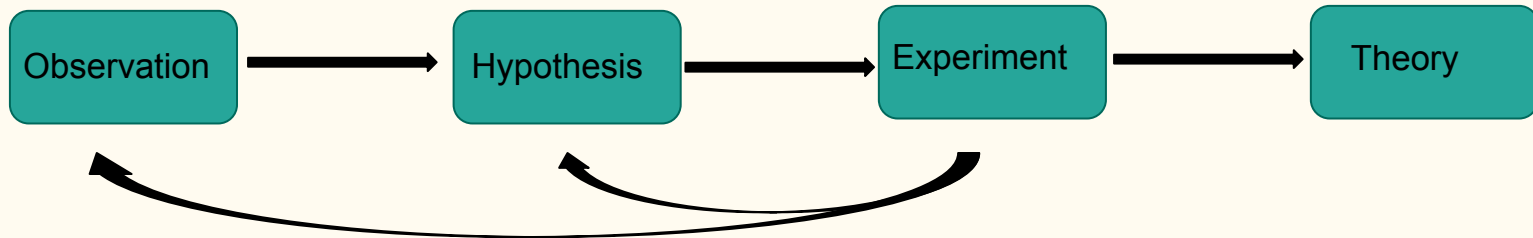
# *Scientia*

“...Aristotle’s Posterior Analytics, knowledge that conforms to this ideal must consist of propositions that are universally and necessarily true. This necessity can be demonstrated through syllogistic inferences that proceed from premises containing the cause of the conclusion. Accordingly, scientia consisted in a **systematic, demonstrative presentation of why things behave the way they do**, and not in the discovery of the causes from which demonstrations followed.”

# Modern Scientific Method

Empiricism and emphasis on repeated experimentation- Aristotle, Ibn Sina, Ibn al-Haytham, others

16th c.: Francis Bacon, Galileo, many others

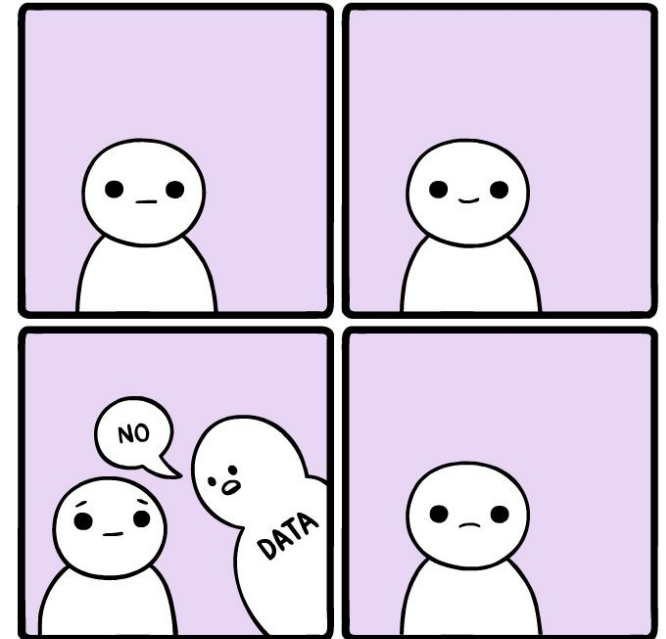
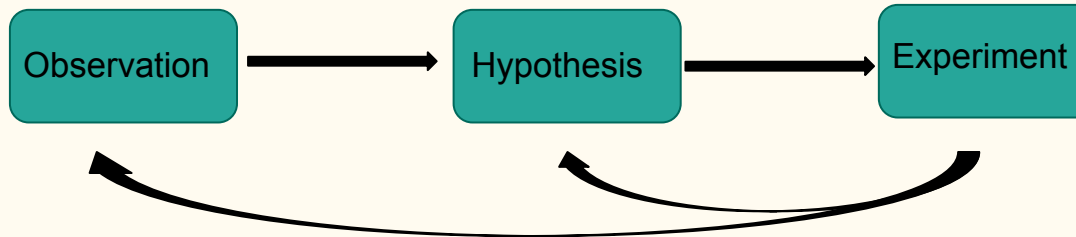




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# *Causae et Curae*

Written in both German and Latin

Themes central to Hildegard's philosophy involving man's creation in nature as a primary healing force

- Recipes to counter “retention of the menses”
- Labor pains as curse of Eve
- Importance of hygiene and diet, rest, and exercise

Complimentary to *Physica*

Kidney Stone

Whoever has a stone in him should take fresh bile of a young bull and twice as much of its blood, and dry them. He should pulverize saxifrage, equal to the amount of bile and place it all, tied in a little cloth, in strong, good, clear wine and frequently drink it on an empty stomach and after he has eaten, but not while he is eating, for then it would be consumed by the food. The bitterness of the bile, with the heat of the blood, tempered by the coldness of the saxifrage, dissolves the stony coagulation in the person.

## Original Article

# Inhibition of calcium oxalate precipitation by bile salts

LUCIANO SASO, ELEONORA GRIPPA, MARIA TERESA GATTO AND  
BRUNO SILVESTRINI

*Department of Pharmacology of Natural Substances and General Physiology, University of Rome, Rome, Italy*

### Abstract

**Background:** Both urinary and biliary stones can contain calcium. Bile salts (BA), which are known to bind  $\text{Ca}^{2+}$ , are commonly used to dissolve the latter but not the former.

**Methods:** The effect of physiologic BA on calcium oxalate (CaOx) precipitation was evaluated by a recently developed method.

**Results:** The  $\text{Ca}^{2+}$  binding properties of BA were confirmed by small but significant decreases in pH observed following addition of  $\text{CaCl}_2$  to bile acids solutions. More importantly, BA inhibited CaOx precipitation with effective concentrations of approximately  $10^{-3}$  mol/L. The clinical relevance of the latter observation is presently unknown but it is of note that in the same *in vitro* assay, the activity of BA appeared comparable to that of citric acid, the most common drug for urolithiasis. Although BA do not reach mmol/L levels in urine, they are known to change the physico-chemical properties of this fluid, possibly slowing down the crystal growth process. However, the hypothetical therapeutic use of BA in former stone patients would present at least two major problems: (i) hepatotoxicity and (ii) lithogenic activity, due to hyperoxaluria subsequent to increased intestinal absorption of oxalate.

**Conclusion:** The ability of BA in effectively binding calcium ions and in inhibiting the precipitation of CaOx appears of interest from both a physiopathologic and a pharmacologic point of view, even if it does not currently seem exploitable for prophylactic or therapeutic purposes.

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**Conclusion:** The activity of BA in effectively binding calcium ions and in inhibiting the precipitation of CaOx, one of the most common biliary pathologies, is a pharmacologic point of view, even if it does not currently seem to be a promising approach for prophylactic or therapeutic purposes.

Plausible

# *Physica* – humoral characteristics

## Nine books

1. **Plants**
2. Elements
3. Trees
4. Stones
5. Fish
6. Birds
7. Animals
8. Reptiles
9. Metals

### LXXXIX. Radish

Radish (retich) is more hot than cold. After it is dug up, it should be placed underground in a damp place for two or three days. This tempers its energy, so that it is much better for eating. When it is eaten it cleanses the brain and diminishes noxious humors in the intestines. If a strong and fat man eats radish, it cures him and cleanses him internally, but it will harm a sick, lean body. If a sick person wishes to eat it, he should first dry it over a hot tile and reduce it to a powder. He should add salt and fennel seed, and eat it thus with bread. It purges the foulness inside him and strengthens him. One who has much phlegm should pulverize radish in the same way. Then he should cook honey and wine and put the powder into it. When it has cooled a bit, he should drink this, with or without food. The powder purges the phlegm and the honey keeps him from becoming lean. It is thought that eating it expels a person's evil humors and stench. One who eats radish should eat galingale afterward. This checks the stench of his breath and does not harm him.





# Radish efficacy

Antibacterial properties of raphanin, found in radish seed, have been documented in modern scientific literature since 1947 (Ivanovics and Hovarth, 1947). Current traditional usage of black round radish in Mexico for the treatment of gallstones has also attracted the interest of modern researchers. Several scientific studies have been conducted on the effects of the black round radish juice or pigments on gallstones (Castro-Torres, 2012 and 2014), intestinal inflammation (Sipos et al., 2002), and even in promoting detoxification enzymes (Hanlon et al., 2007; N'jai et al., 2012).

# Primary (scientific research) literature

Banihani, S.A. 2017. Radish (*Raphanus sativus*) and Diabetes. *Nutrients* 9(9): 1014. doi:10.3390/nu9091014.

Castro-Torres, I. et al. (2014). *Raphanus sativus* L. var *niger* as a source of phytochemicals for the prevention of cholesterol gallstones. *Phytother Res.* 28(2):167-71. doi: 10.1002/ptr.4964.

Castro-Torres, I. et al. (2012). Antilithiasic and Hypolipidaemic Effects of *Raphanus sativus* L. var. *niger* on Mice Fed with a Lithogenic Diet. *J Biomed Biotechnol.* 2012: 161205. doi: 10.1155/2012/161205.

Ivanovics, G. and S. Hovarth. 1947. Isolation and Properties of Raphanin, an Antibacterial Substance from Radish Seed. *Experimental Biology and Medicine.* 66(3): 625-630.

N'jai, A. et al. (2012). Spanish Black Radish (*Raphanus Sativus* L. Var. *niger*) Diet Enhances Clearance of DMBA and Diminishes Toxic Effects on Bone Marrow Progenitor Cells. *Nutrition and Cancer* 64(7): 1038-1048.

Sipos, P. et al. 2002. Effects of black radish root (*Raphanus sativus* L. var *niger*) on the colon mucosa in rats fed a fat rich diet. *Phytother Res.* 2002 Nov;16(7):677-9.



Source  
reputability

# Reputability

Type of source (primary, secondary, tertiary)

Author's background- interpretation, expertise, affiliation, credibility

Citations

Context

Publication location

- Not all websites are bad, not all books are good

Wikipedia

Peer review

# Publication Reputability

Journal Impact Factor

Journal Citation Reports and Web of Science (behind paywalls)

Forums on ResearchGate (Scientists create accounts and share their work, often hosting free pdfs)

Journal Evaluation Tool (CC BY-NC-SA 4.0 license):

[https://digitalcommons.lmu.edu/librarian\\_pubs/40/](https://digitalcommons.lmu.edu/librarian_pubs/40/)

How many and who cites the work?

# A search for Bald's eyesalve

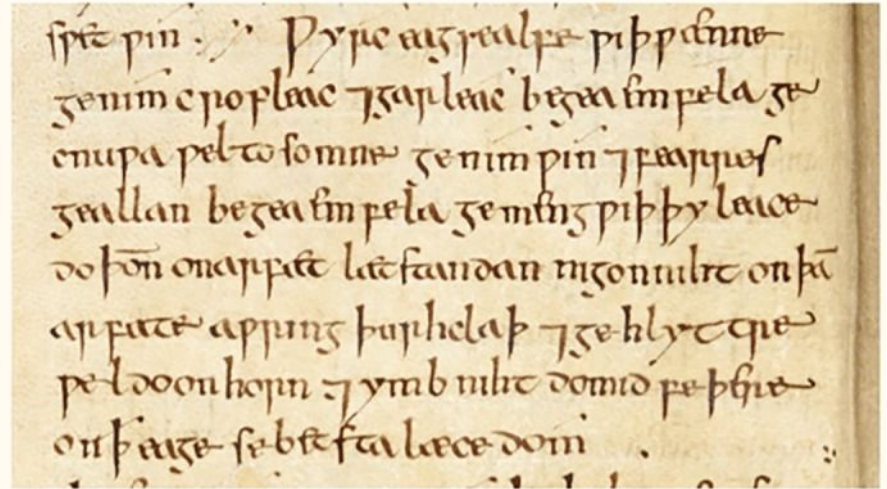
# Bald's Leechbook eyesalve (10th c. Anglo-Saxon)

*Dyrc eazsealf piþ pænne: zenim cropleac ⁊ garleac bezea emfela, zecnupe pel tosomne, zenim pin ⁊ fearres zeallen bezean emfela zemenz piþ by leaces, do þonne on arfæt læt standan niȝon niht on þæm arfæt aprinz þurh claf ⁊ hlyttre pel, do on horn ⁊ ymb niht do mid feþre on eaze; se betsta læcedom*

—Old English text in *Bald's Leechbook*

Make an eyesalve against a wen: take equal amounts of cropleac and garlic, pound well together, take equal amounts of wine and oxgall, mix with the alliums, put this in a brass vessel, let [the mixture] stand for nine nights in the brass vessel, wring through a cloth and clarify well, put in a horn and at night apply to the eye with a feather; the best medicine

—Modern English translation by the British Library



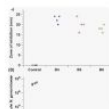
Bald's Leechbook (London, British Library, Royal 12, D xvii)  
[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4542191/mBio.2015.Jul-Aug;6\(4\):e01129-15](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4542191/mBio.2015.Jul-Aug;6(4):e01129-15).  
Published online 2015 Aug 11. doi: [10.1128/mBio.01129-15](https://doi.org/10.1128/mBio.01129-15)

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## The safety profile of Bald's eyesalve for the treatment ...

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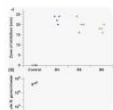
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## Characterization of the antibacterial activity of Bald's eyesalve against drug resistant *Staphylococcus aureus* and *Pseudomonas aeruginosa*

Amanda L Fuchs<sup>1</sup>, Alan J Weaver Jr<sup>1</sup>, Brian P Tripet<sup>1</sup>, Mary Cloud B Ammons<sup>1</sup>, Martin Teintze<sup>1</sup>, Valérie Copié<sup>1</sup>

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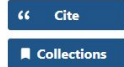
### Abstract

Bald's eyesalve is an Anglo-Saxon medicinal remedy that has been used through ancient times to treat eye sty infections and may represent a source of ancientbiotics. This study assessed the efficacy of Bald's eyesalve against several strains of *Staphylococcus aureus* and *Pseudomonas aeruginosa*,

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## Characterization of the antibacterial activity of Bald's eyesalve against drug resistant *Staphylococcus aureus* and *Pseudomonas aeruginosa*

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### Abstract

Bald's eyesalve is an Anglo-Saxon medicinal remedy that has been used through ancient times to treat eye sty infections and may represent a source of ancientbiotics. This study assessed the efficacy of Bald's eyesalve against several strains of *Staphylococcus aureus* and *Pseudomonas aeruginosa*, including a multi-drug resistant phenotype, and identified the principal compound conveying antibacterial activity. Bald's eyesalve formulations were produced by combining garlic, onion or leek, wine, bovine bile, and brass, with specific ingredient omissions in several formulations, followed by incubation at 4 °C for 9 days. Bald's eyesalve formulation ES-GBBr exhibited the greatest antibacterial activity against *S. aureus* and *P. aeruginosa*. Fractionation of ES-GBBr using molecular size exclusion and organic solvent partitioning isolated its antibacterial activity to the small molecule nonpolar fraction, and 1D <sup>1</sup>H NMR revealed the identity of the antibacterial agent to be allicin. Depletion of allicin from this fraction by addition of exogenous cysteine established that all observable growth inhibition originated from allicin. Quantification of allicin demonstrated that its concentration was significantly greater in ES-GBBr compared to the ES-O formulation; however, this was not due to greater yield. The antibacterial



OPEN **Anti-biofilm efficacy of a medieval treatment for bacterial infection requires the combination of multiple ingredients**

Jessica Furner-Pardoe<sup>1,2,9</sup>, Blessing O. Anonye<sup>1,7,9</sup>, Ricky Cain<sup>1,8</sup>, John Moat<sup>3</sup>, Catherine A. Ortori<sup>4</sup>, Christina Lee<sup>5</sup>, David A. Barrett<sup>4</sup>, Christophe Corre<sup>1,6</sup> & Freya Harrison<sup>1,2</sup>

Novel antimicrobials are urgently needed to combat drug-resistant bacteria and to overcome the inherent difficulties in treating biofilm-associated infections. Studying plants and other natural materials used in historical infection remedies may enable further discoveries to help fill the antibiotic discovery gap. We previously reconstructed a 1,000-year-old remedy containing onion, garlic, wine, and bile salts, known as 'Bald's eyesalve', and showed it had promising antibacterial activity. In this current paper, we have found this bactericidal activity extends to a range of Gram-negative and Gram-positive wound pathogens in planktonic culture and, crucially, that this activity is maintained against *Acinetobacter baumannii*, *Stenotrophomonas maltophilia*, *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Streptococcus pyogenes* in a soft-tissue wound biofilm model. While the presence of garlic in the mixture can explain the activity against planktonic cultures, garlic has no activity against biofilms. We have found the potent anti-biofilm activity of Bald's eyesalve cannot be attributed to a single ingredient and requires the combination of all ingredients to achieve full activity. Our work highlights the need to explore not only single compounds but also mixtures of natural products for treating biofilm infections and underlines the importance of working with biofilm models when exploring natural products for the anti-biofilm pipeline.

# Impact of all four ingredients

Each of Bald's eyesalve ingredients has known antimicrobial properties or compounds (onion and garlic<sup>28,31,38</sup>, bile<sup>39-41</sup>, wine<sup>42-44</sup>). We explored the contribution of all four ingredients to both planktonic and biofilm activity of Bald's eyesalve to build a picture of their relative contributions. Planktonic activity appeared almost entirely attributable to garlic. However, tests against *S. aureus* Newman biofilms, grown in a synthetic wound model, showed garlic exhibited no antibacterial activity in this more clinically-relevant setting. In fact, no preparation which omitted any one ingredient possessed full activity in the biofilm assay. This confirms our previously published finding that Bald's eyesalve anti-biofilm activity is contingent on the presence of all four ingredients<sup>19</sup>.

“When you read it as a microbiologist, you think that it’s got to do something because every ingredient in it has some antibacterial activity when you test it in a test tube. It seemed like a sensible one to put together,” Harrison tells Katie Hunt of [CNN](#). “It’s also very clearly targeted to a bacterial infection from the description of the symptoms in the book.”



Vials of the recreated salve University of Warwick

The microbiologist adds, “There’s a high risk that these diabetic foot ulcers are completely resistant to any antibiotic treatment. Then there’s a risk of a person developing sepsis ... and people end up having their foot or lower leg amputated.”

Interestingly, the salve didn’t contain just one ingredient that could be isolated and used on its own. Instead, the solution required all of its ingredients to work effectively.

“This study is exciting because it demonstrates how mixtures of specific plant ingredients, such as those found in Bald’s eyesalve, can sometimes work better than individual components in fighting infection,” Quave tells *Gizmodo*.

In the statement, Harrison explains that most antibiotics in use today were derived from natural compounds. She points out that the team’s research “highlights the need to explore not only single compounds but mixtures of natural products for treating biofilm infections.”

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# The safety profile of Bald's eyesalve for the treatment of bacterial infections

Blessing O. Anonye<sup>1,8</sup>✉, Valentine Nweke<sup>2</sup>, Jessica Furner-Pardoe<sup>1,7</sup>, Rebecca Gabriliska<sup>3</sup>, Afshan Rafiq<sup>2</sup>, Faith Ukachukwu<sup>2</sup>, Julie Bruce<sup>4</sup>, Christina Lee<sup>5</sup>, Meera Unnikrishnan<sup>6</sup>, Kendra P. Rumbaugh<sup>3</sup>, Lori A. S. Snyder<sup>2</sup> & Freya Harrison<sup>1</sup>

The rise in antimicrobial resistance has prompted the development of alternatives to combat bacterial infections. Bald's eyesalve, a remedy used in the Early Medieval period, has previously been shown to have efficacy against *Staphylococcus aureus* in in vitro and in vivo models of chronic wounds. However, the safety profile of Bald's eyesalve has not yet been demonstrated, and this is vital before testing in humans. Here, we determined the safety potential of Bald's eyesalve using in vitro, ex vivo, and in vivo models representative of skin or eye infections. We also confirmed that Bald's eyesalve is active against an important eye pathogen, *Neisseria gonorrhoeae*. Low levels of cytotoxicity were observed in eyesalve-treated cell lines representative of skin and immune cells. Results from a bovine corneal opacity and permeability test demonstrated slight irritation to the cornea that resolved within 10 min. The slug mucosal irritation assay revealed that a low level of mucus was secreted by slugs indicating moderate mucosal irritation. We obtained promising results from mouse wound closure experiments; no visible signs of irritation or inflammation were observed. Our results suggest that Bald's eyesalve could be tested further on human volunteers to assess safety for topical application against bacterial infections.

# Bald's eyesalve reproduction



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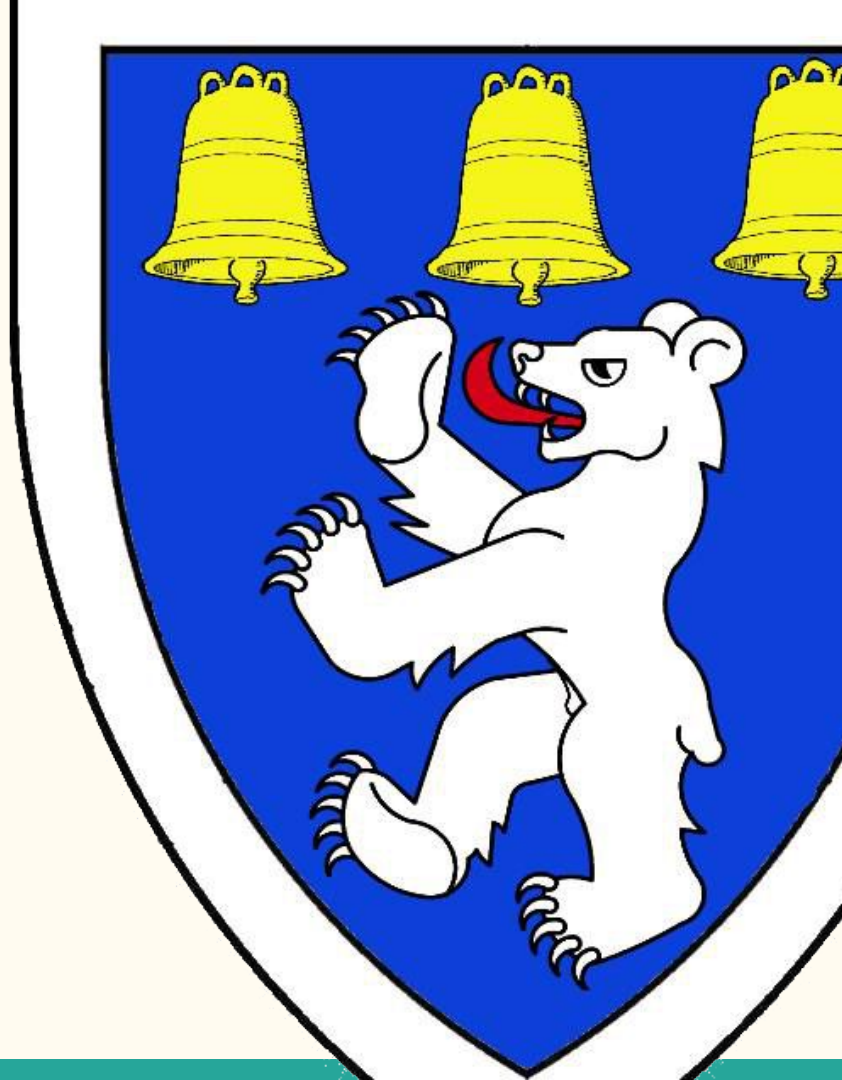
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- J.Ordronaux's 1871 Translation into English verse of Regimen Sanitatis Salerni. Available online at:  
<https://ia802307.us.archive.org/10/items/codehealthschoo00salegoog/codehealthschoo00salegoog.pdf> and <https://archive.org/details/codehealthschoo00salegoog/page/n24>
- Sir John Harington's 1608 translation available from Dr. Becker's course materials online at: <https://faculty.humanities.uci.edu/bjbecker/PlaguesandPeople/week3d.html>
- J.L. Matterer's Gode cookery repository of P. Cummins 1976 translation of the Regimen Sanitatis Salernitanum (missing some passages) is available online at: <http://www.godecookery.com/regimen/regimen.htm>

# Additional Recommended Translations

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