

Testing the Efficacy of Three Medieval Tooth Cleaners

Presented by Lady Eulalia de Ravenfeld
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Introduction

The topic of medieval tooth care is delightfully tangled: there are few certainties and a profound variety of myths. Generally speaking, the popular image of nothing but black teeth and rotting stumps occupying the medieval mouth is probably erroneous. Overall, rates of carries were generally lower in medieval populations than modern populations (Keene). For one thing, although it varied throughout our period of study, overall sugar consumption was lower than today. Additionally, a rougher and less processed diet would have worn away small caries (Haselbauer).

Medieval people do appear to have cared about their teeth, and there are references to various products or procedures intended to clean the teeth or sweeten the breath. To explore some potential methods of tooth cleaning and care, I chose three preparations from the *Compendium Medicinae* of Gilbertus Anglicus: a mint “mouthwash” made with wine, rubbing the teeth and gums with a linen cloth, and two fresh herbs to be chewed.

I chose these three items largely because they seemed the most likely, from a modern perspective, to actually clean the teeth and prevent decay. In order to test how well each cleaned the teeth, I made use of a product (designed for kids) that temporarily stains the teeth blue – the extent to which my teeth remained blue after cleaning would give me a rough indication of how effective that cleaning method was.

Research Process

The Text of the Tooth Care Advice

The *Compendium Medicinae* is a 13th century medical treatise in Latin. Gilbertus Anglicus was a famous physician of his time, and the *Compendium* is a good reflection of the state of medical practice and knowledge in the first half of the 13th century (Handerson). The *Compendium* was also one of many medical works translated into the vernacular in the 15th century, and it is a Middle English translation dating from around 1400 that I have used as my source material. The complete text of the translation, with commentary, is published as Faye Marie Getz's *Healing and Society in Medieval England*. (There are some differences between the Latin and the vernacular version, which are covered in detail in Getz's "Gilbertus Anglicus Anglicized.")

The *Compendium* features chapters on "The Mouth," "The Teeth," and "The Tongue and Throat." Within "The Mouth," there is a section entitled "Stinking of the Mouth" which I decided to focus on. Gilbertus notes that among the causes of stinking of the mouth is "corruption of (th)e gummes and of (th)e tee(th)" and gives the following recommended course of treatment "if (th)er be no roten fleshe":

“...let (th)e mou(th)e be wasshe with wiyn (th)at birche or myntis ben y-soden yn. And let (th)e gummes be wel rubbid with a sharpe lynen cloo(th) vnto (th)ey bleden. And let him ete / origanum, mynte, and pelety, til (th)ey be wel chewid. And let him rubbe wel his tee(th) with (th)es herbis y-chuwid and also his gummes.” (Getz, *Healing*)

In addition to this cleaning treatment, Gilbertus also recommends spiced wine to be drunk, avoiding moist food (such as milk; he most likely means moist in a humoral sense and not in a literal sense) and to chew and swallow a spice powder. He also advises that the patient should wash well his mouth and rub well his gums and teeth after every meal, which sounds remarkably similar to what a modern dentist would recommend.

A Note on Historical Context

Who would have used the *Compendium Medicinae*? The original Latin text most likely would have been used by university-trained physicians working in Western Europe during the 13th and 14th centuries. Given his byname of "Anglicus," Gilbertus may have been living and working on the continent (where he received his medical training) when he wrote this work, although it may also have been in use in England. Formally trained physicians typically served wealthier or higher-status clients, thus these preparations were probably used by the gentry, nobility, or even royalty.

After being translated into English, however, the audience for the *Compendium*, and thus the people using these preparations, would have changed. Such vernacular medical works were widely owned, both by those in medical professions (from formally educated physicians to those who received "on the job" training such as apothecaries) and those without (Getz, "Anglicized"). Medical practioners such as apothecaries, surgeons, barber-surgeons, midwives, and various types of "empirics" were largely (although not entirely) unregulated, and served nearly every

imaginable type of patient (Green). Medical books were also purchased by wealthy patrons who owned numerous books (and seem even to have been trendy), not necessarily to be used (Getz, “Anglicized”), although private individuals may also have purchased vernacular medical treatises such as the *Compendium* for home-use.

The medical advice Gilbertus gives would thus have been accessed by a wide swath of medieval society.

Recreation Process

Wine Mouthwash

The text: "...let (th)e mou(th)e be wasshe with wiyn (th)at birche or myntis ben y-soden yn."

I interpreted this as wine with fresh herbs placed in it and allowed to sit for some time then swished around in the mouth and spat out. I also experimented with simmering wine with fresh mint. However, that resulted in a very harsh product, and from a modern perspective this would change or even destroy any of the plant compounds that combat tooth decay. I have not yet experimented with using birch in place of the mint.

I used a relatively inexpensive French white wine. I was unable to find specific advice on what sort of modern wine is most similar to 15th century English wine. Wine was produced in England at least up until the reign of Henry VIII, although in relatively limited quantities and only on certain estates; much of this wine was white and of low quality (Hammond). Most wine drunk in England was imported, much of it from Gascony (now part of France), both white and red (ibid). I decided to use white wine largely because I thought it would combine more pleasantly with mint.

For the "myntis" I suspect that several species of mint would have been used. Unfortunately "Arctic Blast 2008" killed off the mint plants of nearly everyone I know, other than spearmint, so I ended up using only spearmint. I added an ounce of fresh mint to the bottle of wine, recorked it (actually it had a screw top), and let it sit for a month.

Linen Cloth

The text: "And let (th)e gummes be wel rubbid with a sharpe lynen cloo(th) vnto (th)ey bleden."

I used a small piece of fairly rough linen leftover from a sewing project, which I rubbed vigorously all over my teeth and gums. I am happy to report that my gums did not "bleden," so I rubbed until they hurt a little and my teeth felt smooth and polished.

Nearly all linen that one can purchase readily has been softened; I suspect the "sharpe" cloth called for in the text would have been much rougher than the sample I have used.

Herb Chew

Text: "And let him ete / origanum, mynte, and peletry, til (th)ey be wel chewid. And let him rubbe wel his tee(th) with (th)es herbis y-chuwid and also his gummes."

I chewed fresh spearmint and oregano and then used my fingers to rub the masticated herbs around my mouth, spitting them out afterwards. Again, the choice to use spearmint was dictated by circumstances; I would like to try this with other types of mint.

Pellitory (*Anacyclus pyrethrum*), also called Spanish Chamomile, is said to relieve toothache and promote saliva production; the part used is the root, which may be chewed or made into lozenges, a tincture, or a gargle (Grieve). In all of my hunting, I was not able to find it.

Efficacy

One of my major goals of this project was to offer some evidence that medieval medical practices were not as wacky as many people seem to assume. Each of the tooth cleaners I chose is likely to have been at least somewhat effective at reducing halitosis and general “mouth ooginess” in the absence of rotting teeth or advanced gum disease:

- Rubbing the teeth and gums with cloth would have removed plaque and stimulated the gums.
- The alcohol content of wine is actually too low to constitute an effective antiseptic, but a 2007 study found that some organic compounds found in wine are effective against the dental pathogen *Streptococcus mutans* (Thimothe et al). (However, these compounds are much more abundant in red wine.) Mint or birch would freshen the breath and may have some antimicrobial properties.
- Chewing fresh herbs would have physically scraped off plaque, and the chlorophyll in fresh green plants may have some antibacterial properties. Additionally, this would definitely freshen the breath at least temporarily.

To test how well each of these actually worked, I used a product called “Agent Cool Blue™” made by Listerine and marketed toward kids (or maybe their parents). This is a pre-brushing rinse which is supposed to temporarily stain plaque blue. I found that it really just stained my entire mouth blue, but this still worked well enough to show me about how well each cleaner worked. For each test, I followed the directions on the Agent Cool Blue™ bottle, visually assessed how blue my teeth were, cleaned my teeth, and visually assessed the change in blueness. I performed each of these tests on a different day.

The results of my (extremely limited) testing were as follows:

- *Control*: I followed my regular tooth brushing routine but did not floss. There was almost no blue left on my teeth, with a negligible amount remaining in the deepest crannies.
- *Mouthwash*: This did not remove much of the blue. However, it did leave my mouth feeling clean and puckery for a few minutes, and the smell of wine and mint would mask more unpleasant odors.
- *Cloth*: After rubbing all sides of my teeth and my gums with the cloth, there was still a lot of blue in between my teeth, however, everywhere else was quite clean.
- *Chewed Herbs*: These worked even better than brushing my teeth – there was no blue left anywhere in my mouth. The taste was *very* strong, and my mouth felt and smelled fresh and pleasant for a long time afterwards. My lady at first said that I smelled “quite kissable” but later revised this to “like pizza.” A modern quibble: this leaves a lot of cute little flecks of green between the teeth, which is not what we usually think of when we imagine that just-brushed look.

Conclusions and Future Experiments

Overall, medieval tooth cleaners are interesting to experiment with, and I believe that many are more effective than often assumed. Of course, I will probably stick with a toothbrush and floss, but I also have a very different diet from my medieval forebears.

I would like to keep exploring this topic further. There are quite a number of recipes and procedures for tooth cleaners from the Middle Ages, and I would like to test some more of them using these same methods.

The real question, though, is how well any of these would prevent decay and gum disease. To answer this (without a multi-year double blind study!), I think it would be necessary to test how effective different methods are at removing or killing microbes. If I had access to a microbiology lab, I would be curious to see if I could culture my own mouth fauna; perhaps by swabbing my mouth before and after a given tooth cleaner and culturing the result, I would be able to see which tooth cleaners are effective against *S. mutans* and other oral pathogens.

Again, I suspect that the results of such a test may prove surprising, and offer further defense of medieval medical and dental care generally.

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