Pharmacognosy and Trichomoniasis: A Scoping Review Protocol

Claire Hartwell OMS3, Melanie Arslanian OMS2, Brad A Haubrich PhD

Touro University Nevada College of Osteopathic Medicine, Henderson NV

Background

- Trichomoniasis or "trich" is the most common non-viral sexually transmitted infection (STI) [1].
- Trich has historically been considered a nuisance infection, though recent studies have linked it to squalae including comorbid STIs, reproductive cancers, reduced fertility, pregnancy complications, and pelvic inflammatory disease (PID) (**Fig. 1**) [2].
- Trich is transmitted sexually and caused by the eukaryotic pathogen *Trichomonas vaginalis* (**Fig. 2**) [1,2].

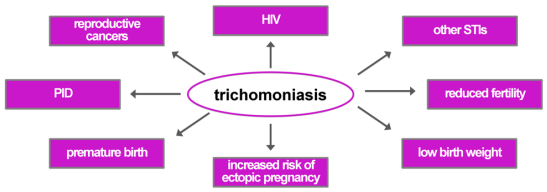

Figure 1. Morbidities correlated to trichomoniasis.

Presentation and Epidemiology

- Infected males are often asymptomatic. Infected females can sometimes be asymptomatic. Females tend to present with a wide range of symptoms, commonly vaginal discharge and irritation [1-3].
- Risk factors include sexual intercourse without barrier protection, history of and current STIs, exchanging sex for money, and history of drug use [2,3].
- The incidence of trich varies globally with the highest incidences in the WHO regions of Africa and Western Pacific (**Fig. 3**) [4].

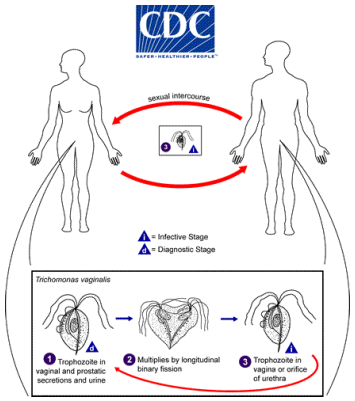

Figure 2. *Trichomonas vaginalis* infectious lifecycle. From Ref 1.

Diagnosis and Treatment

- The traditional diagnostic method of trichomoniasis has been wet mount microscopy. However, due to its limited sensitivity it is now being replaced by NAATs [2,3].
- Locally, screening and treatment of trich is provided by multiple institutions including the SNHD sexual health clinic and Planned Parenthood [5].
- First-line treatment is antiparasitic agent metronidazole. Refractory cases can be treated with tinidiazole or secnidazole, which also belong to the nitroimidazole class [1,2,6].
- Drug resistant cases are on the rise [6].

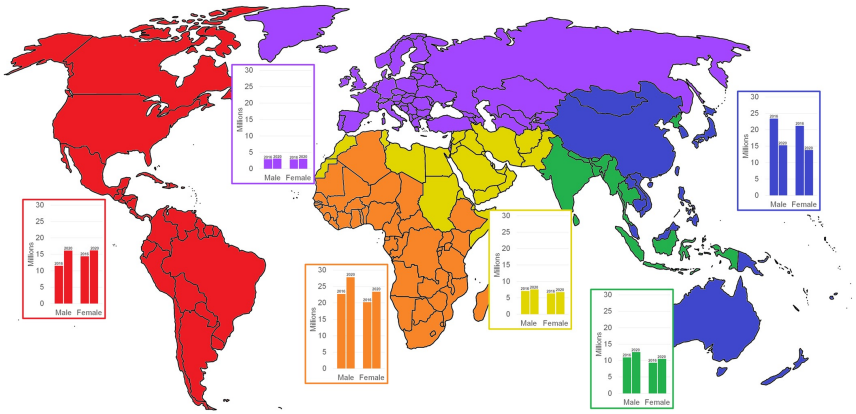

Figure 3. Trends in incident trichomoniasis from 2016 to 2020 in the six WHO regions.

Why Essential Oils?

- As we are beginning to understand the health risks of trich, it is important to spread awareness of the most common non-viral STI.
- With the rise of drug resistance, new tools are needed in the armamentarium.
- Essential oils are a potential source of bioactive natural products, which can be useful in the discovery and development of new drugs [7].
- Several natural products have been discovered as medicines for infectious disease (**Table 1**).

Medicine	Action	From	Discovered
Artemisinin	Antimalarial	Sweet wormwood	1972
Fumagillin	Antiamoebal	Aspergillus	1949
Penicillin	Antibacterial	Penicillium	1928
Quinine	Antimalarial	Cinchona	1820
Undecylenic acid	Antifungal	Castor beans	1877

Table 1. Antiinfectives discovered from natural products.

Methods and Preliminary Results

- This scoping review follows PRISMA guidelines.
- The search strategy includes a string for Trichomonas/trichomoniasis combined with a string for aromatherapy/essential oil (**Fig. 4**).
- Inclusion criteria is comprised of both clinical and laboratory cases.
- Preliminary search in PubMed tests show 17 results.

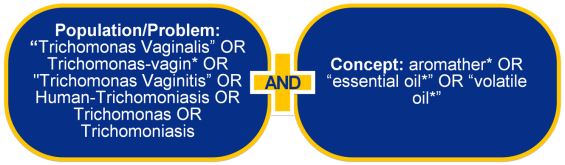

Figure 4. Search strategy.

Next Steps

- Scoping review protocol will be registered with Open Science Framework.
- We are developing a data extraction tool that will encompass such information as:
  - Clinical, animal model, parasite culture
  - Source of essential oils
  - Bioactive compounds, if known
  - Bioactivity metrics
- After the protocol is finalized, we will commence a broader search of multiple databases and Title/Abstract screening.

References

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