STANDARD DEVIATIONS: Drink to Your Health?

Greetings,

Has COVID-19 driven you over the edge, yet? If it's driving you to drink, you might consider the Gin and Tonic as the libation of choice. After all, its medicinal properties are the stuff of legend and, now, of speculation for help with the current pandemic.

How to make the perfect gin and tonic

- Nail the ratio. As a general rule, it's 1/3 gin to 2/3 tonic water – (50ml gin to 100ml tonic, for example).
- Stir, stir, and then stir again. It's important to mix the gin and tonic to avoid layering of flavors. Mixing allows the two to marry together and complement each other.
- Keep it chilled. Your glass should be filled with lots of ice cubes. Too much ice doesn't dilute gin but keeps it perfectly chilled. This dulls the effect of alcohol in your mouth, meaning the drink is more pleasant to taste.
- Pick your glass wisely. Ideally, either a high ball or Copa for long cocktails such as a G&T. The Copa glass is traditionally used as the standard G&T glass in Spain, whereas in the UK they typically use a high ball.
- Say no to plastic. Glass does matter. Glass as a material is better suited than plastic as it doesn't contain any elements that could potentially react with your spirit and leach into your drink.
- Get your garnish right. You should match garnish to your gin as it can enhance the experience. Some gins, for instance, have citrus notes and warm earthy spices, others emphasize juniper or added flavors. In the past, the availability of citrus was more limited and exotics like cucumber were prominent in Utah.
- Smell it (no, really!). Aroma will have a major impact on your drinking experience. It's vital to remember we perceived aromas not only through our nose but also our mouth – i.e. each time we swallow the aromas go from the back of our throat up to the nose. So before you sip, take a sniff (but not micro plates)!

In the 17th century, the Spanish had discovered that indigenous peoples in what is now Peru used a kind of bark to address various "fevers." Stripped from the cinchona tree, the bark seemed to work well for malaria. The "Jesuit's bark," as it was known, quickly became a favored treatment for malaria in Europe.

Eventually it became clear that cinchona bark could be used not only to treat malaria, but also to prevent it. The bark—and its active ingredient, **quinine powder**—was a powerful medicine. But it also became a powerful new weapon in the European quest to conquer and rule distant lands.

Quinine powder soon became critical to the growth of the British Empire and European colonization. By the 1840s British citizens and soldiers in India were using **700 tons of cinchona bark annually** for their protective doses of quinine. Quinine kept troops healthy, allowed officials to survive in low-lying and wet regions of India, and permitted a small but powerful British population to prosper in Britain's tropical colonies. French, German, and Belgian colonists were also using quinine in their African expansion.

But quinine is bitter. Quinine was so bitter that the British took to mixing the powder with soda and sugar. "Tonic water," of a sort, was born.

Erasmus Bond introduced the first commercial tonic water in 1858—the very same year the British government ousted the East India Co. and took over direct control of India. Schweppes' introduced, in 1870, "Indian Quinine Tonic," specifically aimed at the growing market of overseas British who, every day, had to take a preventative dose of quinine. It's still made by Schweppes, today.

It was only human nature that at some point during this time some enterprising colonist **combined his (or her) daily dose of protective quinine tonic with a shot (or two) of gin**. Rather than knock back a bitter glass of tonic in the morning, why not enjoy it in the afternoon with a "healthy" gin ration?

The gin and tonic was born—and the cool, crisp concoction could, as Churchill observed (and practiced), start saving all those English lives.

Chloroquine is an amine acidotropic form of quinine that was synthesized in Germany by Bayer in 1934 and emerged approximately 70 years ago as an effective substitute for natural quinine. For decades, chloroquine was the front-line drug for the treatment and prophylaxis of malaria and is still one of the most prescribed drugs worldwide. This facilitated the rapid expansion and colonization of Africa by Europe.

Hydroxychloroquine differs from chloroquine by the presence of a hydroxyl group at the end of the side chain: the N-ethyl substituent is β-hydroxylated. This molecule is available for oral administration in the form of **hydroxychloroquine sulfate**.

The clinical indications and toxic doses of these drugs slightly differ. In malaria, the indication for chloroquine was a high dose for a short period of time (due to its toxicity at high doses) or a low dose for a long period of time. Hydroxychloroquine was reported to be as active as chloroquine against *Plasmodium falciparum* malaria and less toxic, but it is much less active than chloroquine against chloroquine-resistant *P. falciparum* owing to its physicochemical properties. **What is advantageous with hydroxychloroquine is that it can be used in high doses for long periods with very good tolerance**.

Unfortunately, the efficacy of chloroquine for malaria has gradually declined due to the continuous emergence of chloroquine-resistant *P. falciparum* strains. Its use is limited to a small region of Africa where the resistance has not yet evolved.

Chloroquine is also utilized in the treatment of autoimmune diseases. Specifically Systemic lupus erythematosus (SLE). SLE is an autoimmune disease in which the immune system attacks its own tissues, causing widespread inflammation and tissue damage in the affected organs. It can affect the joints, skin, brain, lungs, kidneys, and blood vessels. There is no cure for lupus.

The activity of the molecule is not limited to malaria and the control of inflammatory processes. It has shown broad-spectrum activity against a range of bacterial, fungal and viral infections. In the 1990s, chloroquine repurposing was explored against human immunodeficiency virus (HIV) and many other viruses associated with inflammation due to its tolerability, rare toxicity, inexpensive cost and immunomodulatory properties.

The **antiviral properties of chloroquine** described in vitro have sometimes been confirmed during treatment of virus-infected patients but **have not always been reproduced in clinical trials** depending on disease, concentration used, duration of treatment and the clinical group.

Recently, hydroxychloroquine has been promoted as a treatment for COVID-19. There is not any valid study data to support its use, at this time.

Well, how does this molecule family prevent and control malaria? How does it help with Lupus? What is the anti-viral mechanism? How could it be used to fight COVID-19? Why did Utah spend $800,000 on an unproven remedy? I thought you'd never ask. Next week I'll break it down! 'Til then…….

Have a great week and be safe, Cheers!

Bryan