A New Combination of Technologies Combat Diabetic Foot Problems

AVAL Diabetic Socks Enhanced with Clinically Proven Cupron Copper

BY TOM TANNO

The Need for Greater Protection

"To be considered a 'diabetic sock,' it seems all it takes is the name on the package and the *typical* three features: a non-binding leg, seamless toe, and padded foot," says Gus Blythe, President, Drymax Technologies, Inc. "Most diabetic socks are made to merely avoid the problems caused from wearing ordinary socks. It is clear that what's currently available does not meet the needs of many diabetics."

> **"The new AVAL Diabetic socks deliver a more hygienic environment for the skin and toenails."—Blythe**

"Achieving real advancement in making diabetic socks," emphasizes Blythe, "requires using better technologies. Our research led us straight to Cupron® Copper. Enhancing *drymax* fibers with Cupron Copper creates a 'super fiber' able to keep feet dry, provide skin enhancement and kill fungi and bacteria in the socks. The new AVAL Diabetic socks deliver a more hygienic environment for the skin and toenails."

When Copper Is More Valuable Than Gold

Cupron's copper-based antimicrobial technology is used in healthcare, consumer, industrial and military applications. In 2016, the US Environmental Protection Agency (EPA) approved several Public Health Claims made by Cupron, noting that the fibers kill 99.9% of Athlete's Foot fungus and odor-causing bacteria within 12 hours of contact with Cupron Copper-enhanced socks. "Our textiles are bioactive. When copper ions contact microbes, they neutralize them," says Vikram K. Kanmukhla, PhD, VP, Innovation & Quality, Cupron Inc. [www.cupron.com].

Cupron Copper Technology has been independently tested in laboratory settings against generally accepted clinical test protocols, using standard test conditions. Under these conditions, Cupron Copper is found to be consistently non-toxic and non-irritating to the skin, with no adverse events reported. There are no toxicity issues because, generally, the body metabolizes copper very well.

Copper oxide (Cu_2O) is the active ingredient that lends the fibers a copper color. Embedding copper oxide throughout the entire fiber has been shown to be far superior to simply using the copper as a surface coating (as is the practice of some sock manufacturers) The copper oxide will not wash out or wear out for the life of the socks.

Cupron Copper—An Excellent Antimicrobial

Cupron Copper inhibits growth of bacteria, helping to keep socks odor-free. It also inhibits fungi and yeast growth in socks and helps socks resist deterioration from mold and mildew. (Figure 1)

As has been well-established, diabetics are nearly 3–5 times more likely than the general patient population to develop fungal infections such as onychomycosis and tinea pedis.[1,2] "Diabetic complications often result from the presence of bacteria and fungi. Fungal infections weaken the skin, leading to secondary bacterial infec-

Continued on page 110

New Concepts and Studies

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tions," states Kent Feldman DPM, a practitioner from San Diego, CA.

Several studies have proven the efficacy of wearing socks containing copper oxide in helping with symptoms of Athlete's Foot *(tinea pedis)* such as scaling, erythema, fissures, vesicular eruptions, burning/itching, drainage and odors. These studies can be found on the Cupron website.

The study found that wearing copper oxide-containing socks for at least 10 hours a day, for 4 weeks, resulted in a 31.4% increase in skin elasticity.

Enhancing Skin—Health & Appearance

AVAL's ultra-soft next-to-the-skin fibers are enhanced with Cupron Copper and release millions of copper ions (Cu+/Cu++) that help improve skin appearance. Clinically proven Cupron Copper provides documented performance for a wide range of applications. When worn regularly against the skin, Cupron Copper has been shown to improve the skin's elasticity, flexibility, suppleness and softness as well as appearance in tone and texture[3].

AVAL recommends diabetics wear their copper diabetic socks for 10+ hours a day, based on a study published in *Skin Research and Technology*[3] in 2014. The double-blind, placebo-led, independent trial on skin elasticity was run by CuTest Systems Ltd., an internationally recognized skin-testing institute. The study found that wearing copper oxide-containing socks for at least 10 hours a day, for 4 weeks, resulted in a 31.4% increase in skin elasticity.

"A critical factor in avoiding diabetic complications is maintaining healthy skin," says Dr. Feldman. "It is often a relentless struggle for those with the disease as they often develop dry, even brittle skin. Anything that can help increase skin elasticity is an improvement for this patient population."

Not All Copper Products Are Created Equal

"Lately, there have been a number of products being touted as containing copper," says Blythe. "Don't be confused by those 'As Seen On TV' products, as they are not made with Cupron Copper. Also, some people still wear copper metal bracelets believing they will ease aches and pains, improve flexibility, and increase their sense of well-being, even though these claims are not supported by scientific evidence. Cupron, with their evidence-based copper technology, doesn't make these types of claims," emphasizes Blythe.

Two Different Diabetic Sock Types

AVAL's ACTIVE diabetic sock with *drymax* fibers is to be worn when a diabetic's feet sweat to keep feet dry. The CASUAL Diabetic sock has polyester fibers for diabetics whose feet do not sweat or for those less-active times when feet are not sweating.

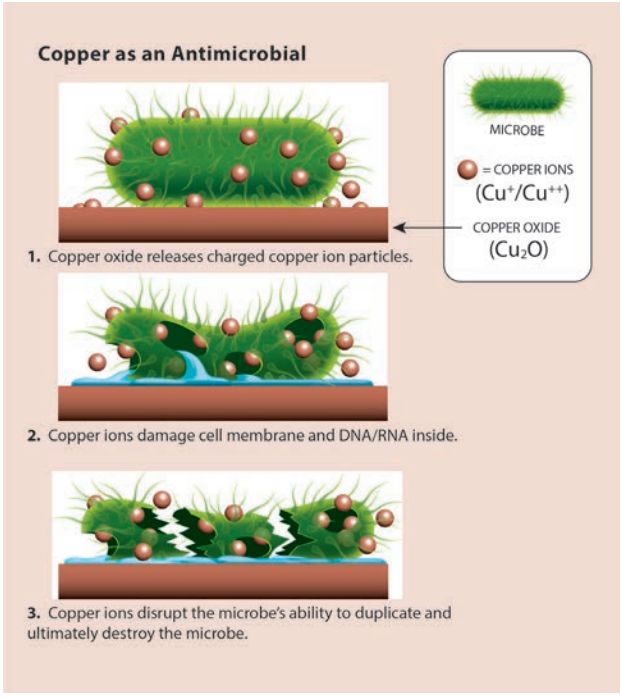

Figure 1: Copper as an antimicrobial

Some diabetics suffer from autonomic neuropathy and thus their feet don't sweat. Other diabetics have hyperhidrosis, causing their feet to sweat excessively. In all cases, diabetics can now wear socks with specifically targeted technologies that take care of their feet.

***drymax* fibers mechanically lift sweat off the skin much like a squeegee and transfer it to the sock's moisture-attracting outer layer.**

Why haven't others offered two types of diabetic socks? Blythe provides a simple answer: "They can't because *drymax* is the only fiber technology that keeps feet dry!"

Figure 2: Watch *drymax* demo video

Keep Feet Dry—Prevent Blisters, Skin Tears and More

The same *drymax* fiber technology used in our ACTIVE diabetic socks helped set four current World Records for ultra-distance running, all without blisters," reports Blythe. In 2019, *Runner's World* magazine bestowed upon *dry-*

Continued on page 111

max their *Editor's Choice Award,* reporting that *drymax* socks are "The Gold Standard of Blister Protection." And in 2020, the same source cited *drymax* for "Best Blister Resistance." Additionally, many professional teams and colleges buy *drymax* socks for their athletes. More information is available at www.drymaxsports.com.

Supplying the demand for socks that keep feet dry and blister-free, Drymax Technologies also produces socks with its proprietary drymax fiber for brands such as Fila, Oakley, Danner, and retailer Road Runner Sports for their R-Gear socks.

"I've been recommending *drymax* socks to my patients for years and am excited to introduce them to the new Aval Diabetic socks."—Feldman

"*drymax* fibers mechanically lift sweat off the skin much like a squeegee and transfer it to the sock's moisture-attracting outer layer. This wet-to-dry exchange happens almost instantly, and it's fun and easy to demonstrate," Blythe says. (Figure 2)

"No other sock has proven to keep feet drier than socks made with *drymax* fiber technology, " adds Blythe. "Independent lab tests confirm that *drymax* socks remain up to 25 times drier than wicking fiber socks."

"Keeping feet dry is important. Dry skin is more resistant to friction and shearing forces," emphasizes Dr. Feldman. "Wet socks weaken skin and increase friction, making feet more vulnerable to skin tears and blisters. Broken skin is an entry point for bacteria, which can lead to infection. I've been recommending *drymax* socks to my patients for years and am excited to introduce them to the new Aval Diabetic socks."

"For delicate diabetic feet, the inside of the sock is critical," adds Blythe. Compare the inside of the diabetic socks you recommend to AVAL. AVAL Diabetic socks are cleanly knit. For one thing, you will not see loose fiber ends on the inside that could ball up, potentially irritating skin." (Figure 3)

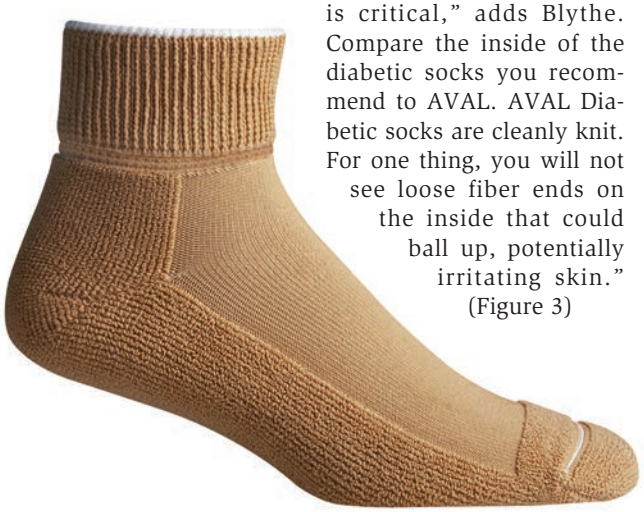

Figure 3: AVAL CASUAL diabetic sock (inside out)

Proactive Help for Diabetics

"Diabetics face many challenges and we're supporting them every way we can. We're not simply selling a sock and sending them on their way," points out Blythe. "It's estimated that 80,000 lower leg amputations occur every

year in the USA due to diabetic complications. Seventy-five percent of these amputations could be prevented if diabetics would *inspect their feet daily* and visit their doctor regularly. To prompt diabetics to inspect their feet daily, we made an INSPECT YOUR FEET DAILY static cling sticker. In addition, we produced an in-depth booklet containing information on how to protect the delicate skin of diabetic feet. Both the sticker and booklet are included with each pair of socks," says Blythe.

"Cost is a concern for many diabetics, but they should *never* buy cheap socks. Cheap socks offer little protection and wear out quickly. By contrast, the technologies, features, benefits, durability and satisfaction guarantee make our new AVAL Diabetic socks a GREAT value. We even provide tips on how to make socks last much longer, effectively making AVAL Diabetic socks even more affordable," Blythe says enthusiastically.

The two styles of AVAL Diabetic socks are available in three leg heights and priced $12 to $15. They are made in the USA and can be purchased from www.avalsocks.com. Podiatrists interested in becoming a reseller can contact orders@avalsocks.com. **PM**

References

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