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FILE: ■ *Pelargonium sidoides*

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RE: Review on the Traditional Use and the Science on *Pelargonium sidoides*

Brendler T, van Wyk BE. A historical, scientific and commercial perspective on the medicinal use of *Pelargonium sidoides* (Geraniaceae). *J Ethnopharmacol.* Oct 2008;119(3):420-433.

Pelargonium sidoides is an important traditional medicine in South Africa. In this review, the authors discuss the development of *P. sidoides* into an herbal medicine used to treat respiratory ailments.

Besides *P. sidoides*, several other members of the genus *Pelargonium* have been recorded as medicinal plants in South Africa. Originally, *P. sidoides* was incorrectly described as a variety of *Pelargonium reniforme*. *P. sidoides* has been traditionally used as a treatment for worms in calves and as a medicine for dysentery and colic. On the basis of these anti-infective properties, Charles Henry Stevens introduced in the early 1900s a *P. sidoides* preparation under the name "Steven's Cure" into European medicine for the treatment of tuberculosis. He also used the name "Umckaloabo" for his remedy, claiming that this term originated from the Zulu words "umKhulane" (fever, cough) and "uHlabo" (breast pain). The British Medical Association disputed Stevens' antituberculosis claims. In the early 1990s, it was on the market in Germany as EPs® 7630 (Umckaloabo®; ISO Medicines; Ettlingen, Germany; marketed by Spitzner Arzneimittel, Ettlingen, Germany; a member of Dr. Willmar Schwabe GmbH, Karlsruhe, Germany), this time supported by scientific evidence.

P. sidoides is both wildcrafted and cultivated in the Eastern Cape Province of South Africa and Lesotho. It has a large distribution range in South Africa and Lesotho and is endemic to both. The medicinal parts are the red stems and rhizomes. *P. sidoides* is sometimes adulterated with *P. reniforme*, which is very similar in appearance. The dried material can be differentiated by chemical analysis based on the presence of coumarins not found in large amounts in *P. reniforme*. Germany is the largest market for *P. sidoides*, where it is sold as a licensed herbal medicine. *P. sidoides* products are also sold in the Ukraine, United Kingdom, and North America. The phytochemical constituents of *P. sidoides* and *P. reniforme* include numerous coumarins, coumarin glycosides, coumarin sulfates, flavonoids, proanthocyanidins, phenolic acids, and phenylpropanoid derivatives.

Gallic acid and other phenolic compounds are the active constituents for the antibacterial and antiviral effects of *P. sidoides*. Its immunomodulatory effects are attributed to a combination of phenolic compounds and coumarins that include umckalin and its derivatives. Both *P. sidoides* extract and its isolated constituents, including scopoletin, umckalin, gallic acid, and (+)-catechin, possess antibacterial activity against gram-negative and gram-positive bacteria, including *Staphylococcus aureus*, *Streptococcus pneumoniae*, and *Escherichia coli*. EPs 7630 has shown synergistic antibacterial action against group A beta-hemolytic streptococci (GABHS). It has also been shown to enhance phagocytosis against *Candida albicans*. In addition, EPs 7630 decreases the growth and the adhesion of *Helicobacter pylori* to stomach tissue in vitro. EPs 7630 modulates epithelial cell-bacterial interactions several different ways, which may help to protect mucous membranes from microorganisms and "provide a rationale for the treatment of upper respiratory tract infections with EPs 7630." One group has found that extracts of *P. sidoides* and *P. reniforme* have activity against tuberculosis, which has been attributed to both mono- and di-unsaturated fatty acids. Other researchers have found no antituberculosis activity for *P. sidoides* in vitro and have attributed the plant's effects against tuberculosis to immune system stimulation. Extracts and compounds of *P. sidoides* have been shown to reduce the intracellular survival of *Leishmania donovani* through indirect effects. EPs 7630 also shows activity against *Leishmania major*, increases interferon-beta synthesis, and enhances natural killer cell mediated cytotoxicity and the release of antimicrobial peptides.

There have been 18 clinical trials on *P. sidoides* and conditions that include acute bronchitis and non-GABHS tonsillopharyngitis. EPs 7630 has been shown to shorten the severity and duration of acute bronchitis and tonsillopharyngitis in children and adults. The authors write that the research supports its use in place of antibiotics for these conditions. The studies have confirmed the safety of *P. sidoides* and a low incidence of adverse side effects. Recorded adverse side effects of *P. sidoides* have been mild and include gastrointestinal complaints and skin rashes. There are currently no contraindications or known drug interactions for EPs 7630. The cytotoxicity of coumarins from *P. sidoides* is considered "negligible." A theoretical interaction between anticoagulant and antiplatelet drugs and coumarins in EPs 7630 has not been confirmed, as the coumarins "do not appear to possess anticoagulant characteristics." *P. sidoides* extracts, including EPs 7630, should not be used by pregnant or lactating women due to lack of data.

The authors write that, due to the wealth of coumarins and other compounds identified from a small number of *P. sidoides* samples, research is warranted on the phytochemical properties of more samples of *P. sidoides*, *P. reniforme*, and other "red-rooted" species of the *Pelargonium* genus with histories of ethnomedical use. Given the pre-clinical and clinical evidence, the authors conclude that Umckaloabo can be considered a safe and efficacious remedy for the treatment of acute bronchitis and non-GABHS tonsillopharyngitis in children and adults.

—Marissa Oppel, MS

The American Botanical Council has chosen not to include the original article.

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