

## VASOMAX FOR THE TREATMENT OF MALE ERECTILE DYSFUNCTION

Irwin Goldstein, Culley Carson, Ray Rosen, Anita Islam  
Boston University School of Medicine, Department of Urology, 720 Harrison Avenue,  
Suite 606, Boston, MA, USA  
e-mail: [igoldst@bu.edu](mailto:igoldst@bu.edu); Fax: +1-617-6388487

**Abstract** This paper reviews laboratory and clinical data concerning oral phentolamine mesylate, Vasomax, an  $\alpha$ -1,  $\alpha$ -2 adrenergic receptor antagonist developed specifically for treatment of erectile dysfunction. A contemporary view of the neurovascular mechanisms in penile erection includes the effects of both smooth muscle relaxation and contraction. Contraction of the cavernosal arteries and trabecular smooth muscle appears to be predominantly under the control of  $\alpha$ -adrenergic innervation. Conversely, adrenergic blockade of  $\alpha$ -1 and  $\alpha$ -2 receptors has been shown to facilitate penile erection in both animal and human models. The pharmacokinetic profile of Vasomax appears well suited for an oral erectogenic agent. Vasomax is rapidly absorbed and eliminated in normal males. Peak plasma concentrations are achieved in 30-60 min, and the half-life approximates 5-7 h. Food decreases the rate, but not the extent of bioavailability. Vasomax has low protein binding and is excreted primarily via urine and feces. There is a strong dose-response relationship in maximum plasma concentration ( $C_{max}$ ) and area under the curve (AUC), and there are no clear age-related differences in absorption or elimination rates. Efficacy of Vasomax has been systematically evaluated in two (ZON300, ZON301) large-scale, placebo-controlled trials, in addition to two long-term open-label studies. In both studies, Vasomax was associated with significant improvements in the erectile function domain scores of the International Index of Erectile Function (IIEF). Further improvements were noted as the duration of treatment and dose level were increased. The percentage of successful penetration attempts was also significantly improved with Vasomax compared to placebo. For patients who continued in open-label treatment with Vasomax, efficacy was generally well maintained. Vasomax was well tolerated by the majority of patients. The most common side effects observed were nasal congestion (10%), headache (3%), dizziness (3%), tachycardia (3%) and nausea (1%). Side effects were generally dose-related and in the mild-to-moderate range in all three studies. Furthermore, side effects seldom resulted in treatment discontinuation. Very few serious adverse events were observed in these trials. In summary, Vasomax appears to be effective in the treatment of male erectile dysfunction and well-tolerated by the majority of patients. The drug has a satisfactory side effect profile, without significant risk of cardiovascular effects. Results of clinical trials with Vasomax support the concept of adrenergic-blockade as a clinically relevant mechanism in the control of penile erection.