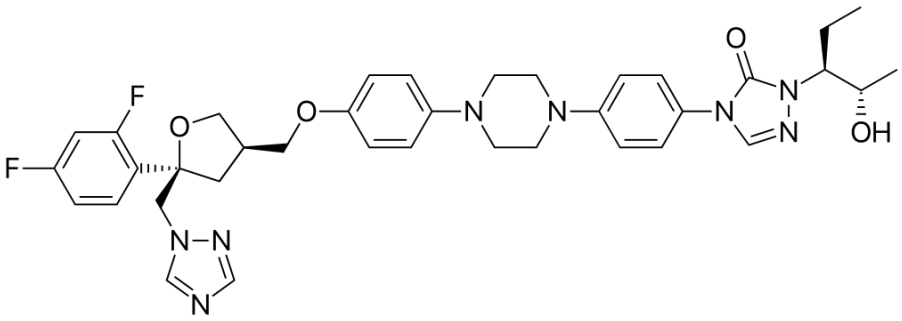
Brand Name: Noxafil
Generic: posaconazole
Type: small molecule
Year Accepted/Phase: 2006

Mechanism:

Posaconazole is a triazole antifungal agent that inhibits the enzyme lanosterol 14-alpha-demethylase, which is crucial in the biosynthesis of ergosterol, an essential component of fungal cell membranes. By inhibiting this enzyme, posaconazole disrupts the production of ergosterol, leading to increased membrane permeability and ultimately causing cell death.

Chemical Structure:



Indication:

Noxafil is indicated for the treatment and prophylaxis of a variety of fungal infections, including:

Prophylaxis of Invasive Aspergillus and Candida Infections

Oropharyngeal Candidiasis

Treatment of Invasive Aspergillosis

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Clinical trials:

Prophylaxis in Neutropenic Patients (Phase III)
Pubmed: https://pubmed.ncbi.nlm.nih.gov/17251531/
Purpose: Evaluate the efficacy of posaconazole in preventing invasive fungal infections in neutropenic patients.
Dates: Conducted from 2002 to 2005.
Results: The study showed that posaconazole was significantly more effective than fluconazole or itraconazole in preventing invasive fungal infections. The incidence of proven or probable invasive fungal infections was lower in the posaconazole group (2%) compared to the fluconazole or itraconazole group (8%).
Impact: This trial supported the FDA approval of posaconazole for prophylaxis in high-risk neutropenic patients in 2006.

Prophylaxis in Hematopoietic Stem Cell Transplant Recipients (Phase III)
Pubmed: https://pubmed.ncbi.nlm.nih.gov/18041883/
Purpose: Assess the effectiveness of posaconazole in preventing fungal infections in hematopoietic stem cell transplant recipients with graft-versus-host disease (GVHD).
Dates: Conducted from 2002 to 2006.
Results: Posaconazole demonstrated superior efficacy in preventing invasive fungal infections compared to fluconazole. The incidence of proven or probable invasive fungal infections was lower in the posaconazole group (5.3%) compared to the fluconazole group (9%).
Impact: This study further validated the use of posaconazole for prophylaxis in hematopoietic stem cell transplant recipients, contributing to its FDA approval in 2006.

Treatment of Oropharyngeal Candidiasis (Phase III)
Pubmed: https://pubmed.ncbi.nlm.nih.gov/16107193/
Purpose: Evaluate the efficacy and safety of posaconazole in treating oropharyngeal candidiasis, especially in patients refractory to standard therapy.
Dates: Conducted from 2001 to 2004.
Results: Posaconazole was effective in treating oropharyngeal candidiasis, including infections refractory to fluconazole or itraconazole. Clinical success was achieved in 75% of patients treated with posaconazole compared to 38% in those treated with fluconazole.
Impact: This trial supported the FDA approval of posaconazole for the treatment of oropharyngeal candidiasis in 2006.

Treatment of Invasive Aspergillosis (Phase III)
Pubmed: https://pubmed.ncbi.nlm.nih.gov/18835806/
Purpose: Assess the efficacy of posaconazole in treating invasive aspergillosis in patients refractory to or intolerant of standard antifungal therapy.
Dates: Conducted from 2002 to 2006.
Results: Posaconazole demonstrated clinical success in 42% of patients who were refractory to or intolerant of other antifungal treatments. The overall survival rate was also higher in the posaconazole group compared to historical controls.
Impact: These results provided evidence for the use of posaconazole in treating invasive aspergillosis, contributing to its FDA approval for this indication in 2006.