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Mode of Action and Toxicity of Azole Drugs Used in Treatment of Fungal Infections †

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Abstract: The enormousness of Invasive fungal infections (IFIs) are coming much more into notice lately as the world battles with COVID-19 and its side effects. IFIs pose significant health problems in immuno-compromised patients. The clinical manifestations vary and range from colonization in allergic broncho-pulmonary disease to active infection in local aetiological agents. The increase of immunosuppressive agents in association with solid organ transplants, chemotherapy, and improved life-saving medical techniques necessitating indwelling catheters led to a substantial increase in the occurrence of serious invasive fungal infections. Azole antifungals which have saved the day by adding to therapeutic options in the treatment of IFIs work by inhibiting 14α-lanosterol demethylase, a key enzyme in ergosterol biosynthesis, resulting in depletion of ergosterol and accumulation of toxic 14α-methylated sterols in membranes of susceptible fungus. Azoles are classified into two: the triazoles (fluconazole, itraconazole, voriconazole, posaconazole, and isavuconazole) and the imidazoles (ketoconazole). Despite their wide spectrum activity, azole shows toxic effects like hepatitis and inhibition of steroid hormone synthesis in long-term treatments, higher doses, and when taken in combination with other drugs in immunocompromised patients. The review will include the mechanism, spectrum of activity, and toxic effects of azole drugs.

Keywords: azole antifungals; triazoles; imidazoles.

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Conflicts of Interest

The authors declare no conflict of interest.