Review

Versatile effects of sildenafil: recent pharmacological applications

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Abstract:
Sildenafil is a phosphodiesterase-5 (PDE-5) inhibitor and is predominantly used in the treatment of erectile dysfunction. While maintaining an excellent safety and tolerability profile in the management of erectile dysfunction, sildenafil also provides a prolonged benefit in various other diseases. Sildenafil has been shown to have a potential therapeutic efficacy for disorders related to the central nervous system and pulmonary system. In the central nervous system, it exerts its neuroprotective effects in multiple sclerosis and has a significant memory enhancing action. Sildenafil also significantly enhances neurogenesis. Several lines of evidence indicate that targeting PDE5 with sildenafil offers novel strategies in the treatment of age-related memory impairment. Guanylate cyclase/cGMP/protein kinase G pathway or glutamate/nitric oxide/cGMP pathway appears to mediate memory enhancing effects. Some of the positive cognitive features of sildenafil therapy are likely attributable to the mechanisms reviewed here. Sildenafil has been shown to reduce pulmonary hypertension and alleviate pain in animals and humans. The present review primarily focuses on the various pharmacological effects of sildenafil with regard to its influence on the nervous and pulmonary system.

Key words:
sildenafil, neurogenesis, memory enhancement, antinociception, pulmonary hypertension