The pharmacology of caffeine

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1 Introduction

Caffeine is a natural constituent of more than 60 plant species and as such is present in the human diet through drinks based on plant extracts. It has also been used as a flavoring agent in food (baked goods, dairy desserts, puddings and fillings, candy) and beverages (Dr. Pepper, Coca-Cola, Pepsi-Cola, Royal Crown Cola) and also in a variety of over-the-counter pharmaceuticals (1). In such pharmaceuticals, caffeine is present in combination with drugs used as stimulants, pain relievers, diuretics, cold remedies, weight control products, bronchial and cardiac stimulants as well as in drugs for the treatment of acne and other skin disorders. The pharmaceutical properties of caffeine described in this report explain its use in these drugs. These multiple sources of caffeine reflect the human search and interest for psychotropic drugs and stimulants from the plant world.

2 Physicochemical properties of caffeine

Caffeine has been referred to as a purine alkaloid. Its chemical structure was identified as early as 1875 by Medicus (2) as 1,3,7-trimethylxanthine, which closely resembles important endogenous metabolites such as purines, xanthines and uric acid (Fig. 1).

Fig. 1
Chemical structure of purines of biological importance.

- Purine
- Xanthine
- Uric Acid
- Caffeine
- Adenosine