Clinical and Experimental Aspects of Olmesartan Medoxomil, a New Angiotensin II Receptor Antagonist

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ABSTRACT

Olmesartan medoxomil is a new orally active angiotensin II (Ang II) type 1 receptor antagonist. It is a prodrug and is rapidly de-esterified during absorption to form olmesartan, the active metabolite. Olmesartan is a potent, competitive and selective Ang II type 1 receptor antagonist. Olmesartan is not metabolized by the cytochrome P-450 and has a dual route of elimination, by kidneys and liver.

In patients with essential hypertension olmesartan medoxomil administered once daily at doses of 10–80 mg dose-dependently reduced diastolic blood pressure (DBP). Trough-to-peak ratios for both DBP and systolic blood pressure (SBP) were above 50%. At the recommended once-daily starting doses, olmesartan medoxomil (20 mg) was more effective than losartan (50 mg), valsartan (80 mg) or irbesartan (150 mg) in reducing cuff DBP in patients with essential hypertension. The results of cuff SBP and mean 24-h DBP and SBP were similar to those of cuff DBP measurement. In mild-to-moderate hypertensive patients the recommended starting dose of olmesartan medoxomil was as effective as that of amlodipine besylate (5 mg/day) in reducing both cuff and 24-h blood pressure. In lowering DBP olmesartan medoxomil, at 10–20 mg/day, was as effective as atenolol at 50–100 mg/day. In mild-to-moderate hypertensive patients, olmesartan medoxomil, at 5–20 mg once daily, was more effective than captopril at 12.5–50 mg twice daily. At 20–40 mg once daily olmesartan medoxomil was as effective as felodipine, at 5–10 mg once daily. Olmesartan medoxomil has minimal adverse effects with no clinically important drug interactions.

Animal studies have shown that olmesartan medoxomil provides a wide range of organ protection. Olmesartan medoxomil ameliorated atherosclerosis in hyperlipidemic animals.
and ameliorated cardiac remodeling and improved survival in rats with myocardial infarction. Olmesartan medoxomil has renoprotective effects in a remnant kidney model and type 2 diabetes models. Future investigation should reveal whether these beneficial effects of olmesartan medoxomil are applicable to human diseases.