

Comparison of Long-Acting Diltiazem Formulations in Canada

	Cardizem® CD	Tiazac®	Tiazac® XC
Dosage Form	Encapsulated beads of two different rates of release. ¹	Encapsulated beads. ¹	Diltiazem beads compressed into tablet. ²
Interchangeable Formulations³	ACT DILTIAZEM CD APO-DILTIAZ CD DILTIAZEM CD (SAN) DILTIAZEM CD (SIV) PMS-DILTIAZEM CD RATIO-DILTIAZEM CD SANDOZ-DILTIAZEM CD TEVA-DILTIAZEM CD	ACT DILTIAZEM T SANDOZ DILTIAZEM T TEVA-DILTIAZEM ER	No generics currently available
Available Strengths	120, 180, 240 & 300 mg	120, 180, 240, 300 & 360 mg	120, 180, 240, 300 & 360 mg
Method of Drug Release	Core of bead made of sugar is coated with diltiazem and subsequently layered with rate controlling polymer. Two types of beads releasing at different times. ¹	Diltiazem paste converted to small immediate-release beads then coated with rate-controlling polymer. All beads release at same rate. ¹	Diltiazem paste converted to small immediate-release beads, coated with rate-controlling polymer (different polymer from that in Tiazac®), then blended with wax beads/excipients and compressed into tablet. ²
Pharmacokinetic Profile	Two-peaks owing to the two different rates of release of the beads. ¹	Uniform profile throughout 24h period. ¹	Tablet is taken at bedtime so the C _{max} occurs during the morning blood pressure surge, about 11-18h post-ingestion. ²
Administration	Capsules can be opened and intact beads administered on soft food or with water. ⁴	Capsules can be opened and beads administered on soft food or with water. Intact beads can be dispersed in water and administered via nasogastric tube. ⁵	Despite warnings in the monograph, tablets can be split in half. ⁶
Potential advantages	Opening capsule and administration of intact beads.	Opening capsule and administration of intact beads.	Tablet is smaller than either Cardizem® CD or Tiazac® capsules. This formulation is marketed as providing better BP control during the 'morning BP surge', though BP is the only outcome data available. ⁷
		Capsule is smaller than equivalent strength Cardizem® CD. ¹	
		Least expensive formulation. ³	

Notes:

- All of the formulations are indicated for hypertension and stable angina.^{2,8,9}
- Based on clinical effect alone, there is no reason to choose one formulation over the other.
- Studies have found equivalent doses of Tiazac® produce greater reductions in blood pressure^{10,11} and corresponding higher plasma diltiazem concentrations¹² than Cardizem® CD; however no studies have been conducted to compare formulations in terms of outcomes such as stroke, myocardial infarction, and death.
- While different formulations are not interchangeable, when switching between formulations, switch to the same dose, monitor, and adjust dose if needed. The Canadian Hypertension Education Guidelines suggest, "Patients receiving antihypertensive drug treatment should be seen monthly or every 2 months, depending on the level of BP, until readings on two consecutive visits are below their target (Grade D). Shorter intervals between visits will be needed for symptomatic patients and those with severe hypertension, intolerance to antihypertensive drugs, or target organ damage (Grade D). When the target BP has been reached, patients should be seen at 3- to 6-month intervals (Grade D)."¹³

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