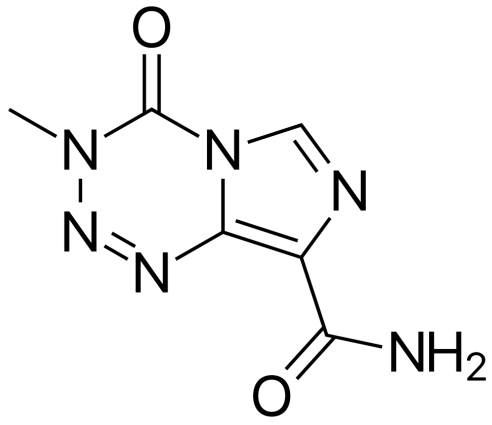
Brand Name: Temodar
Generic: temozolomide
Type: small molecule
Year Accepted/Phase: 1999

Mechanism:

Temozolomide is an alkylating agent that works by adding an alkyl group to the DNA of cancer cells, which ultimately leads to cell death. It specifically targets the DNA during the cell division process, causing breaks and cross-links that the cell cannot repair, leading to apoptosis (programmed cell death).

Chemical Structure:



Indication:

Temodar is primarily indicated for the treatment of:

Newly diagnosed glioblastoma multiforme (GBM) in conjunction with radiotherapy and as maintenance therapy.

Refractory anaplastic astrocytoma.

Clinical trials:

EORTC-NCIC Trial (Phase III)

Pubmed: https://pubmed.ncbi.nlm.nih.gov/19269895/

Purpose: Evaluate the efficacy of temozolomide combined with radiotherapy versus radiotherapy alone in patients with newly diagnosed glioblastoma multiforme.
Dates: Conducted from 2000 to 2002.
Results: The trial demonstrated that the combination of temozolomide and radiotherapy significantly improved overall survival (OS) compared to radiotherapy alone. Median OS was 14.6 months for the combination therapy versus 12.1 months for radiotherapy alone.
Impact: These results supported the approval of temozolomide for newly diagnosed GBM and established it as a standard treatment regimen.

Phase II Study in Refractory Anaplastic Astrocytoma

Purpose: Assess the efficacy and safety of temozolomide in patients with anaplastic astrocytoma that had not responded to other treatments.
Dates: Conducted in the late 1990s.
Results: The study showed that temozolomide had significant activity in this patient population, with a progression-free survival rate of about 6 months.
Impact: The positive results led to the approval of temozolomide for the treatment of refractory anaplastic astrocytoma.

EORTC 26981/22981-NCIC CE3 Trial (Phase III)

Pubmed: https://pubmed.ncbi.nlm.nih.gov/16735709/

Purpose: Evaluate the long-term benefits of temozolomide in newly diagnosed GBM.
Dates: Follow-up results published in 2009.
Results: The 5-year follow-up demonstrated a 5-year survival rate of 9.8% for patients receiving temozolomide and radiotherapy, compared to 1.9% for those receiving radiotherapy alone.
Impact: This trial solidified temozolomide's role in the treatment of GBM, showing long-term survival benefits.