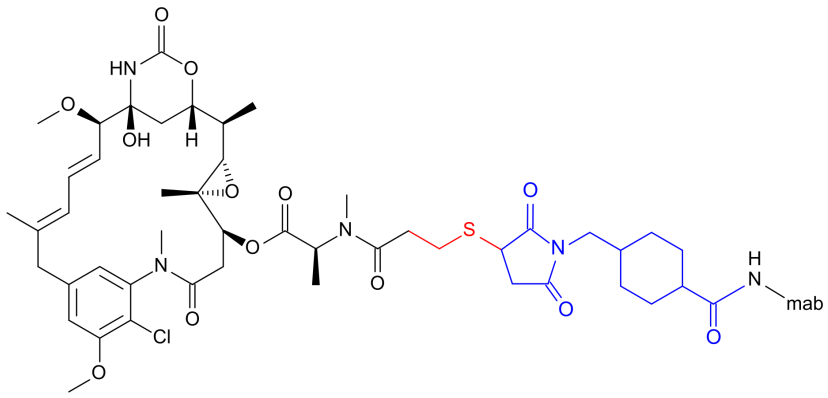
Brand Name: Kadcyla
Generic: trastuzumab emtansine
Type: monoclonal antibody
Year Accepted/Phase: 2013

Mechanism:

Kadcyla combines trastuzumab with DM1, a potent microtubule inhibitor. Trastuzumab binds to the HER2 receptor on cancer cells, delivering DM1 directly to the cells. Once inside, DM1 disrupts the microtubule network, leading to cell cycle arrest and cell death. This targeted approach allows for effective delivery of chemotherapy while minimizing systemic toxicity.

Chemical Structure:



Indication:

Kadcyla is indicated for the treatment of patients with HER2-positive metastatic breast cancer who have received prior treatment with trastuzumab and a taxane, either separately or in combination. It is also approved for the adjuvant treatment of patients with HER2-positive early breast cancer who have residual invasive disease after neoadjuvant taxane and trastuzumab-based treatment.

Clinical trials:

E2100 Trial (Phase III)
Purpose: Evaluate the efficacy of adding bevacizumab to paclitaxel compared to paclitaxel alone in patients with metastatic breast cancer.
Date: Results published in 2007.
Results: Addition of bevacizumab to paclitaxel significantly improved progression-free survival (PFS) but did not significantly improve overall survival (OS).

AVF2107g Trial (Phase III)
Purpose: Assess the efficacy of bevacizumab in combination with irinotecan, fluorouracil, and leucovorin (IFL) compared to IFL alone in patients with metastatic colorectal cancer.
Date: Results published in 2004.
Results: Combination of bevacizumab with IFL significantly improved overall survival, progression-free survival, and response rates compared to IFL alone. This led to the FDA approval of bevacizumab for metastatic colorectal cancer in February 2004.

AVAglio Trial (Phase III)
Purpose: Investigate the efficacy of adding bevacizumab to the standard treatment of radiation therapy and temozolomide in patients with newly diagnosed glioblastoma.
Date: Results published in 2014.
Results: Addition of bevacizumab improved progression-free survival but did not significantly improve overall survival. The trial showed a benefit in delaying disease progression and reducing the need for steroids.

OCEANS Trial (Phase III)
Purpose: Evaluate the efficacy of bevacizumab in combination with gemcitabine and carboplatin in patients with platinum-sensitive recurrent ovarian cancer.
Date: Results published in 2012.
Results: Addition of bevacizumab to chemotherapy significantly improved progression-free survival compared to chemotherapy alone, supporting the use of bevacizumab in ovarian cancer treatment.

AURELIA Trial (Phase III)
Purpose: Assess the efficacy of adding bevacizumab to single-agent chemotherapy in patients with platinum-resistant recurrent ovarian cancer.
Date: Results published in 2014.

Results: Combination of bevacizumab with chemotherapy significantly improved progression-free survival and response rates compared to chemotherapy alone.