Exploring the Effects of Adding Amlexanox to Paclitaxel and Cisplatin Treatments in Killing Cervical Cancer HeLa Cells

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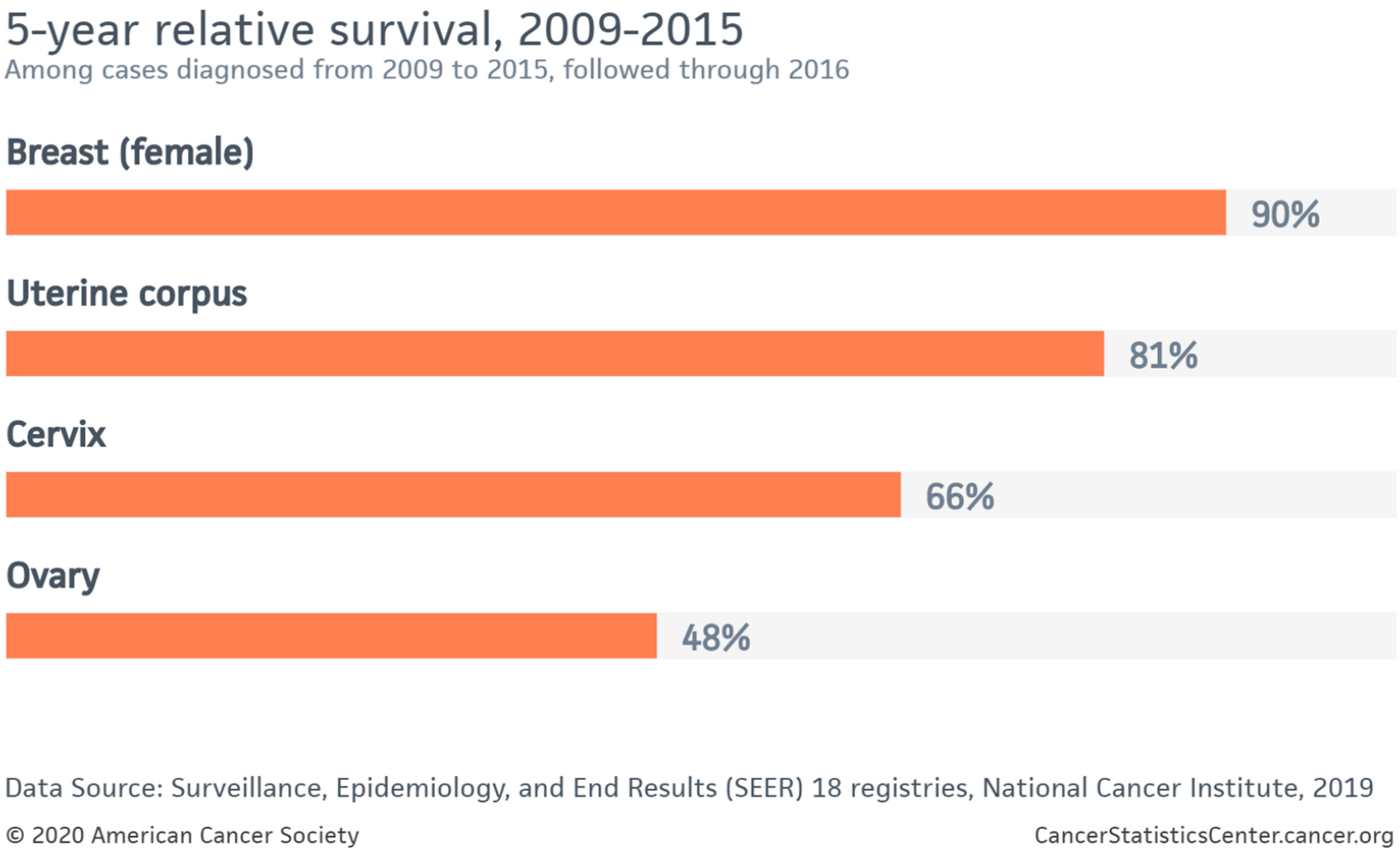
DISCLOSURES

- All authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

CERVICAL CANCER

Cervical cancer is a very preventable type of cancer in women.

However, even with current prevention screenings, such as pap tests, and the HPV vaccination, it is estimated that 13,800 women will be diagnosed with cervical cancer in 2020, and 4,290 women will die in 2020 from this disease (Cancer Statistics Center, American Cancer Society, 2020).

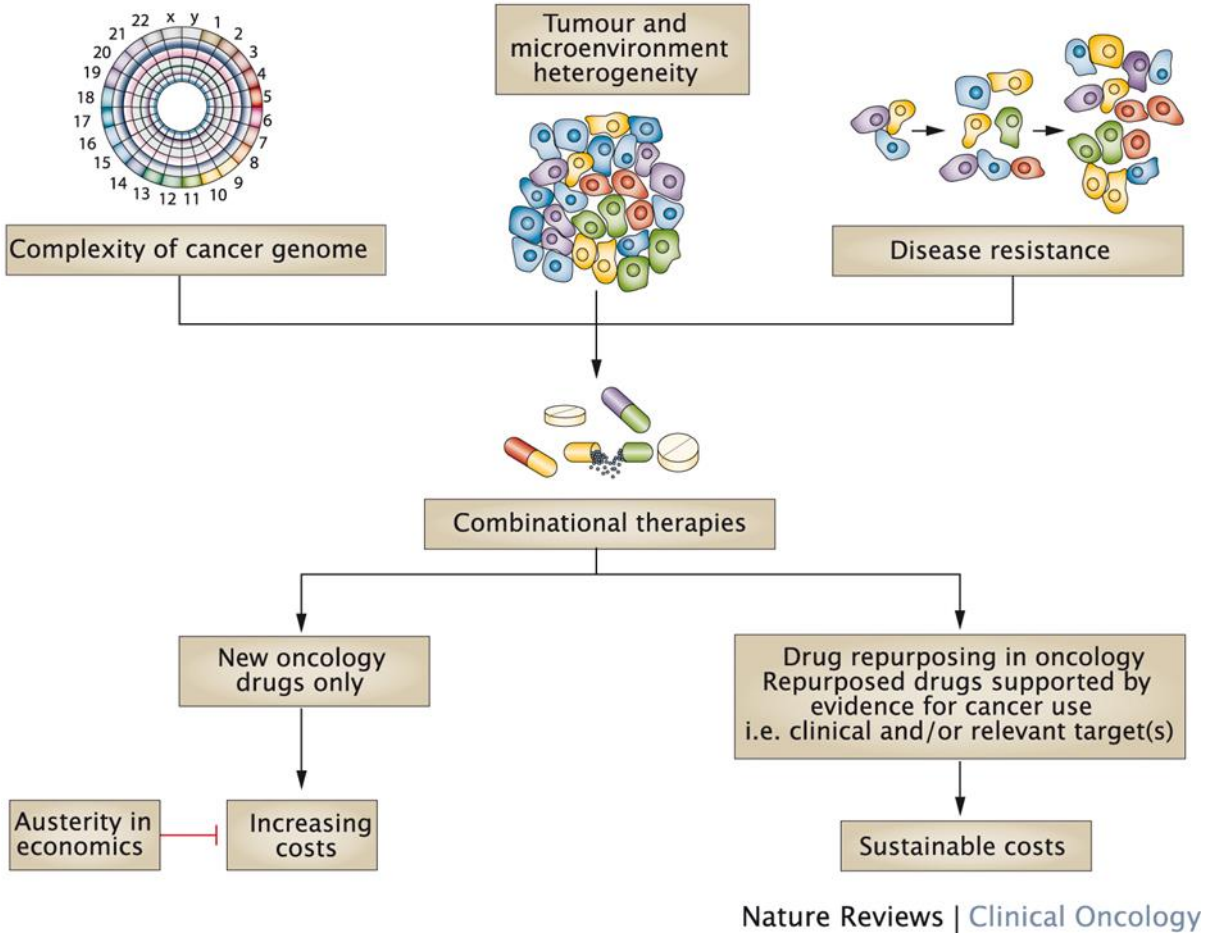


POTENTIAL COMBINATION THERAPIES

Chemotherapeutic agents may be used for advanced stages of cervical cancer.

Anti-cancer agents that are commonly used are: cisplatin, carboplatin, paclitaxel, and topotecan (Chemotherapy for Cervical Cancer, American Cancer Society, 2020).

Drug-repurposing, using medications in different combinations with chemotherapeutics, can be used to create treatment options that have less toxicity but are more efficacious (Reza, 2017, Oncotarget).

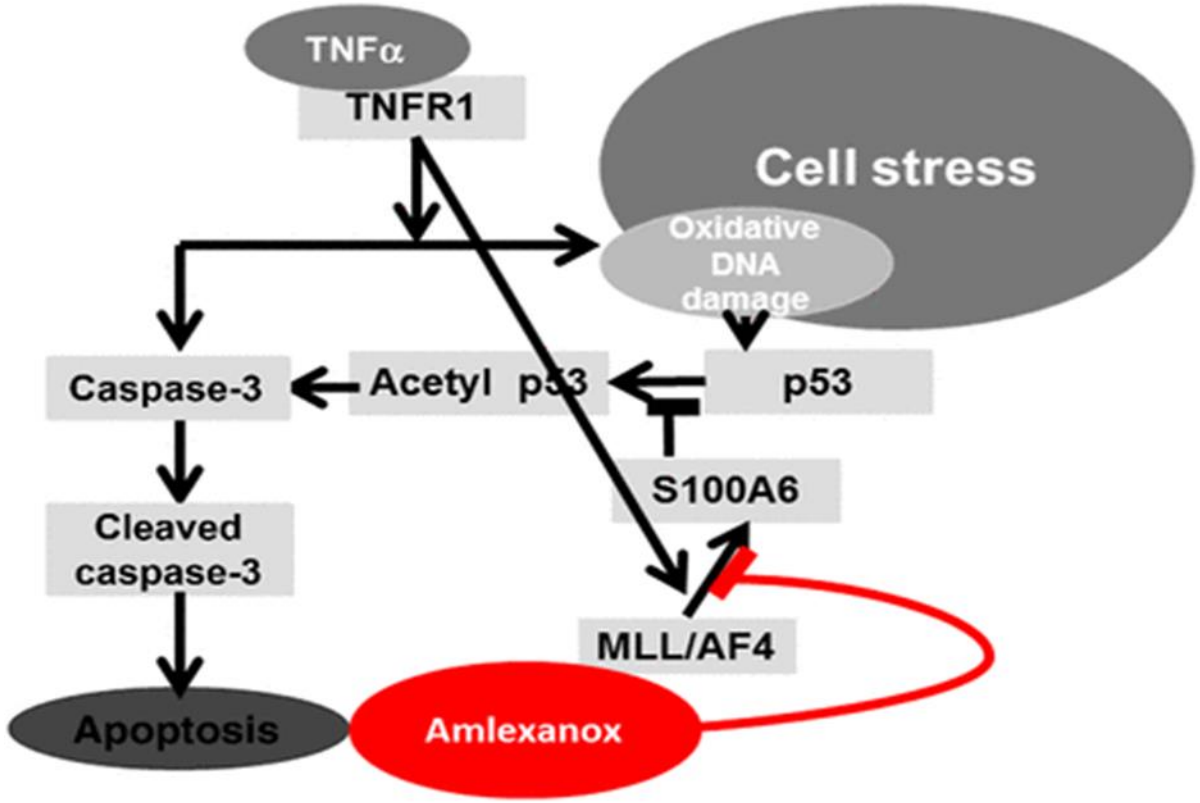


https://cancerworld.net/impact-factor/drug-repurposing-in-oncology-patient-and-health-systems-opportunities/

AMLEXANOX

Amlexanox is a medication that was first approved to treat aphthous ulcers (canker sores). The mechanism of action not well-understood, but it is thought to have anti-inflammatory and pro-apoptotic mechanisms (Amlexanox, Science Direct, 2020).

Can it be tested as a combination therapy with cancer treatment with various chemotherapeutics?

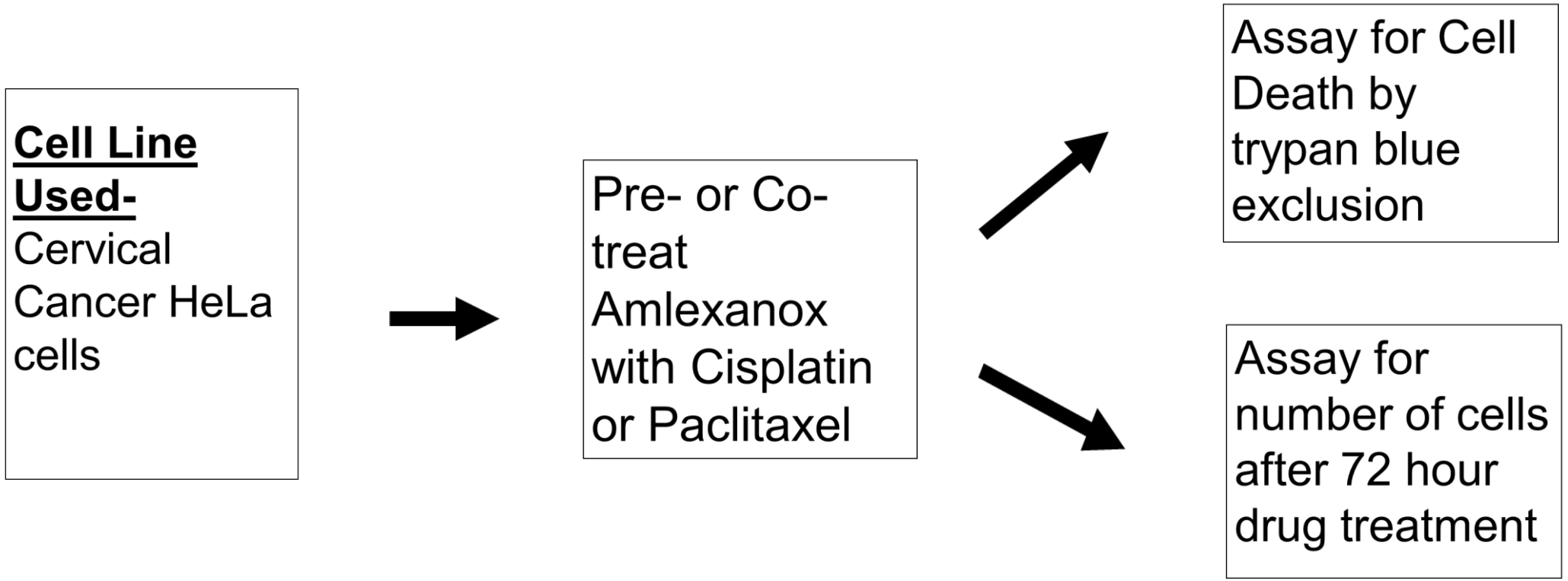


Amlexanox in acute lymphoblastic leukemia in the presence of TNF-α.

https://cancerres.aacrjournals.org/content/77/16/4426/F7

OBJECTIVE AND METHODS

- Determine if Amlexanox is a potential drug to add to Cisplatin and Paclitaxel when treating cervical cancer



EFFECT OF AMLEXANOX ON CERVICAL CANCER HELA CELLS

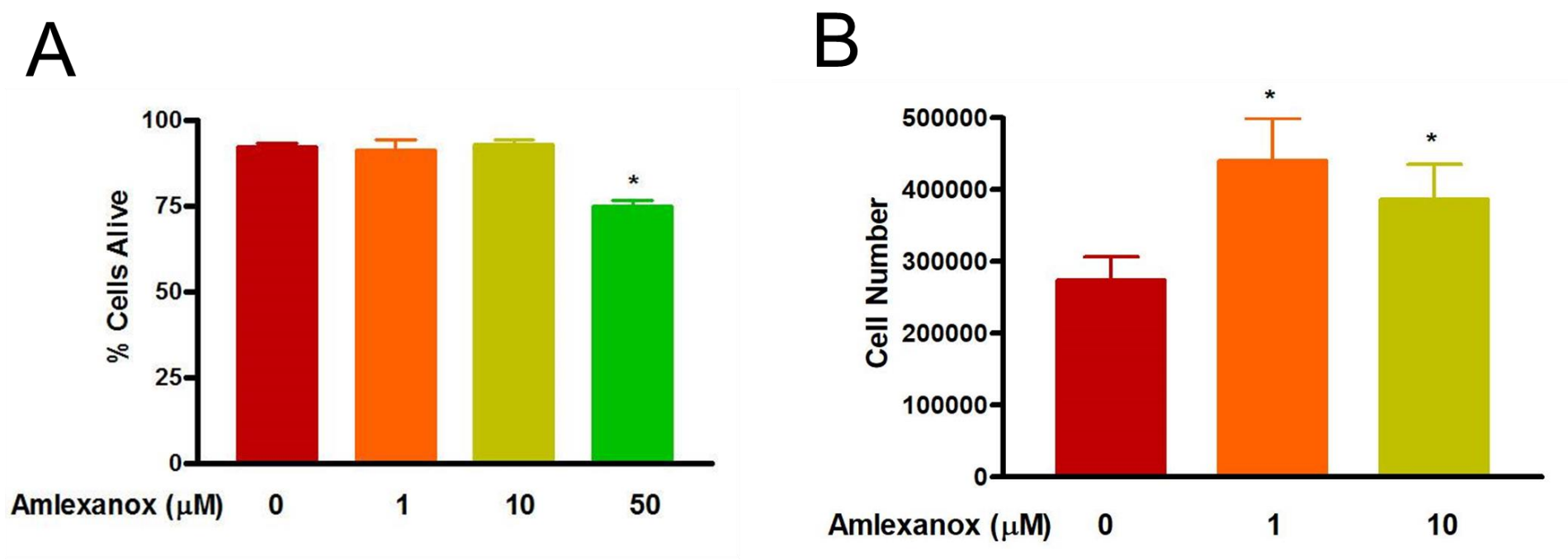


Figure 1: Effect of Amlexanox on Cervical Cancer HeLa Cell Death and Cell Numbers. Effect of 0-50 μM Amlexanox on cell death (A) or cell number (B) after 72 hours drug treament. * indicates $p<0.05$, n=4-7.

EFFECT OF CO-TREATMENT OF AMLEXANOX WITH CISPLATIN AND PACLITAXCEL

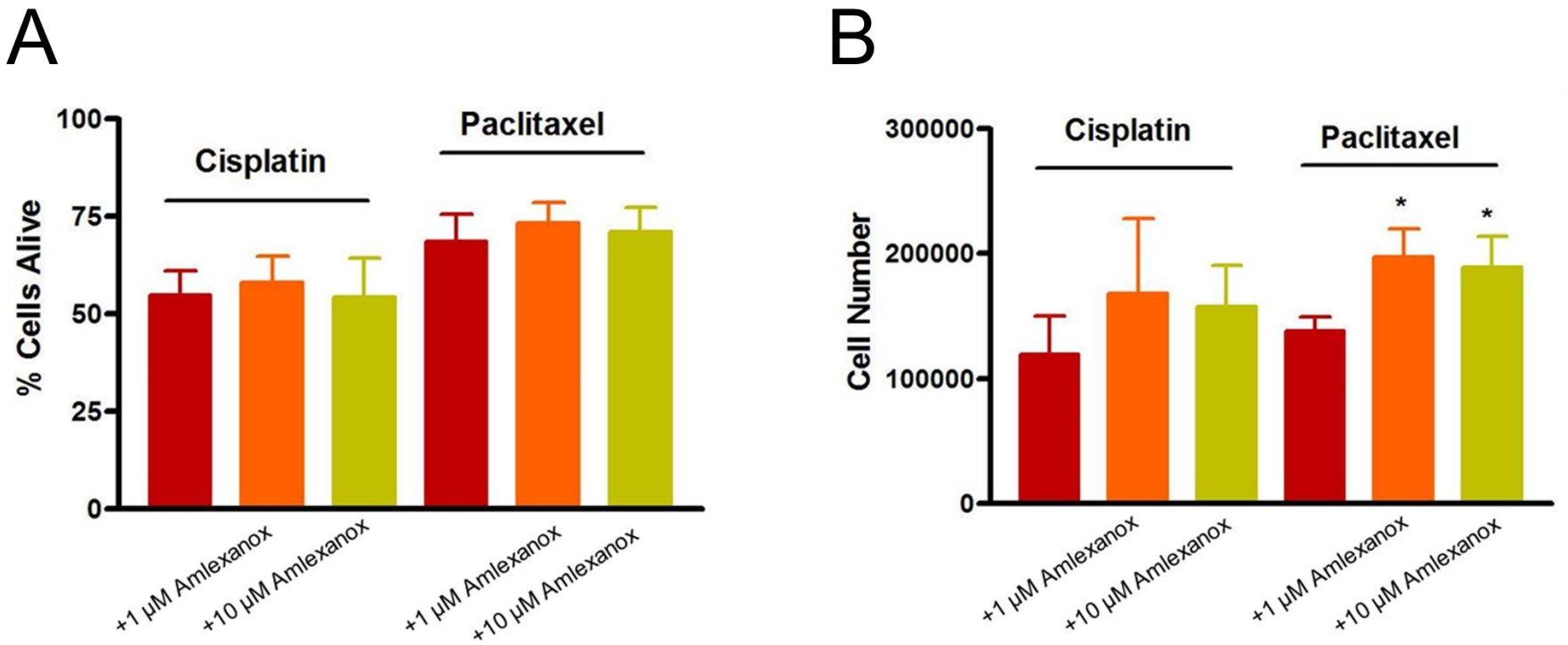


Figure 2: Effect of Amlexanox with either Cisplatin or Paclitaxel on Cervical Cancer HeLa Cell Death and Cell Proliferation. Effect of 0-10 μM Amlexanox on cell death (A) or cell proliferation (B) when co-treated or not with 20 μM Cisplatin or 200 nM Paclitaxol for 72 hours. Cells were treated with Amlexanox 24 hours prior to being treated with Cisplatin or Paclitaxel. * indicates $p<0.05$, $n=4-7$.

EFFECT OF CO-TREATMENT OF AMLEXANOX ON CANCER CELL RECOVERY POST-TREATMENT

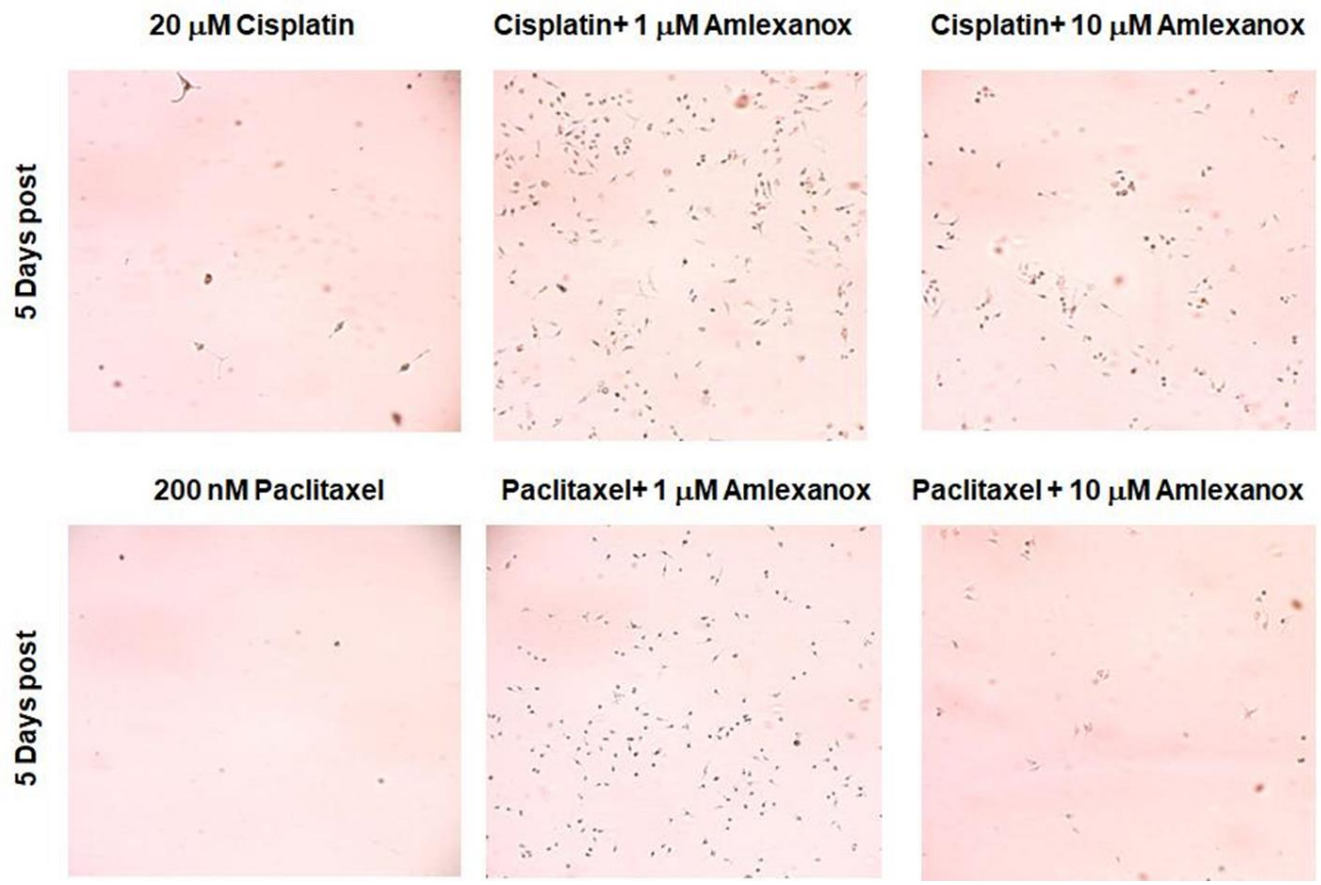


Figure 3: Effect of Amlexanox on recovery of cervical cancer HeLa cells 5 days after treatment with either 20 μM Cisplatin or 200 nM Paclitaxel with or without Amlexanox treatment. Images of cells were taken using a camera attached to a microscope.

CONCLUSIONS

- **Summary**
  - The addition of Amlexanox to either Cisplatin or Paclitaxel did not increase the efficacy of these chemotherapeutic agents and increased the number of cancer cells.
  - Cancer cells that were treated with Amlexanox recovered more than cancer cells that were only treated with Cisplatin or Paclitaxel.
- **Future Directions**
  - Amlexanox with Paclitaxel and Cisplatin together
  - Amlexanox on different cancers such as ovarian cancer
  - Explore involvement of various signaling pathways (ie MAPK)

QUESTIONS?

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