

Common heart drug repurposed to treat rare cancer in Europe

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Propranolol, a drug that's commonly used to treat high blood pressure, has received Orphan Drug Designation in Europe to treat soft tissue sarcoma. Credit: Tommie Morelos / Texas Tech University Health Sciences Center El Paso

A drug that's commonly used to treat high blood pressure is being repurposed for a rare tissue cancer in Europe. The medication, named

propranolol, was recently granted Orphan Drug Designation by the European Commission (EC).

The designation signifies that the EC supports the use of a drug to treat patients because of its significant benefit to those living with a rare disease—in this case, soft tissue sarcoma. The cancer affects approximately one quarter of a million people living in Europe, and is generally considered difficult to treat.

"People with soft tissue sarcomas have a very poor survival rate," says Brad Bryan, Ph.D., a biomedical scientist at Texas Tech University Health Sciences Center El Paso (TTUHSC El Paso). "Four out of 10 patients with the cancer will die and are in urgent need of new treatment options."

Propranolol's ability to treat angiosarcoma, a very lethal form of soft tissue sarcoma, was originally discovered by Bryan's TTUHSC El Paso lab. In his study, Bryan used cell lines and animal models to show that propranolol could fight angiosarcoma and remarkably reduce the growth of tumors; the results were published in a 2013 [PLOS One](#) paper. Later, in a 2015 [JAMA Dermatology](#) article, Bryan described treating a patient with angiosarcoma—who only had months left to live—and bringing the tumor down to undetectable levels. What's more, the treatment had little to no side effects.

Several scientists across the world have reported similar results since then, testing propranolol on their own patients with the rare cancer.

A 69-year-old woman with metastatic angiosarcoma made a full recovery after being treated with propranolol by Shripad Banavali, M.D., an oncologist at Tata Memorial Center in Mumbai, India and Eddy Pasquier, Ph.D., a researcher at the University of Aix-Marseille. The results were published in [ecancermedicalscience](#). After witnessing the

patient's improvement, Drs. Banavali and Pasquier were prompted to go even further; just a year later, the two successfully treated seven patients with inoperable angiosarcoma, as described in [EBioMedicine](#).

"What surprised us the most about this new treatment is the fact that we got 100 percent clinical response, which is defined as either tumor regression or stabilization of the disease," says Pasquier. "This is not a cure in the sense that most patients will eventually see their disease progress, but this level of response is still very impressive, especially in this patient population with a very bleak prognosis; we're talking patients whose prognosis was roughly one year, give or take a few months."

The results soon caught the attention of the Anticancer Fund. After gathering research on the drug's effects, the nonprofit foundation—which is dedicated to expanding the range of treatment options available to cancer patients—applied to have propranolol approved as an orphan drug in Europe.

"Our ultimate objective is to have propranolol, if proven effective, fully licensed as a new standard of care treatment for angiosarcoma," says Pan Pantziarka, Ph.D., an oncology researcher at the Anticancer Fund.

"Bryan's research was important because not only did it demonstrate the validity of this approach in animal models, but it also illustrated the effect of treatment in a patient for whom existing treatments are unlikely to be effective. These two elements were important in making the case for the clinical potential of propranolol in this rare and hard-to-treat cancer."

In an age of soaring cancer drug prices, propranolol offers a glimmer of hope for the checkbooks of some [cancer](#) patients.

First developed in the 1960s, today, propranolol is a generic drug, meaning it's available for a relatively affordable price. Current

prescription drug therapies for sarcomas can cost [patients](#) upwards of \$10,000 a month. Propranolol, however, costs about \$4 a month.

"Treating soft tissue sarcoma can easily top \$100,000 to \$200,000," Bryan explains. "While propranolol will certainly not replace these treatments, our data show it improves the ability of the treatments to work—all at the cost of a generic co-pay."

Provided by Texas Tech University

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