

# Getting more anti-cancer medicine into the blood

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Scientists are reporting successful application of the technology used in home devices to clean jewelry, dentures, and other items to make anticancer drugs like tamoxifen and paclitaxel dissolve more easily in body fluids, so they can better fight the disease. The process, described in ACS' journal, *Langmuir*, can make other poorly soluble materials more soluble, and has potential for improving the performance of dyes, paints, rust-proofing agents and other products.

In the report, Yuri M. Lvov and colleagues point out that many drugs, including some of the most powerful anti-cancer medications, have low solubility in water, meaning they do not dissolve well. IV administration of large amounts can lead to clumping that blocks small [blood vessels](#), so doses sometimes must be kept below the most effective level. In addition, drug companies may discontinue work on very promising potential new drugs that have low solubility. The scientists note numerous efforts to improve the solubility of such medications, none of which have been ideal.

The scientists describe using sonification, high-pitched [sound waves](#) like those in home ultrasonic jewelry and denture cleaners, to break anti-cancer drugs into particles so small that thousands would fit across the width of a human hair. Each particle of that power then gets several coatings with natural polysaccharides that keep them from sticking together. The technique, termed nanoencapsulation, worked with several widely used anti-cancer drugs, raising the possibility that it could be used to administer more-effective doses of the medications. The report also

described successful use to increase the solubility of ingredients in rust proofing agents, paints, and dyes.

**More information:** "Converting Poorly Soluble Materials into Stable Aqueous Nanocolloids" *Langmuir*.

Provided by American Chemical Society

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