



Nobel Prize for TCM-inspired discoveries against malaria

It is appropriate and timely that Chinese scientist Youyou Tu was awarded half of the 2015 Nobel Prize in Physiology or Medicine in recognition of her pioneering work on the antimalarial artemisinin, extracted from *Artemisia annua*, an ancient herbal remedy used to treat fever. Attention garnered by the Nobel award hopefully will generate interest in traditional medicines from other parts of the world, including Europe, Africa, the Middle East, the Indian sub-continent, and the Americas.

<http://www.theguardian.com/science/2015/oct/05/william-c-campbell-satoshi-omura-and-youyou-tu-win-nobel-prize-in-medicine>



Winners of the 2015 Nobel Prize in Physiology or Medicine

William C. Campbell, Prize share: 1/4 (Drew University, Madison, NJ, USA) - "for their discoveries concerning a novel therapy against infections caused by roundworm parasites"

Satoshi Ōmura, Prize share: 1/4 (Kitasato University, Tokyo, Japan)- "for their discoveries concerning a novel therapy against infections caused by roundworm parasites"

Youyou Tu, Prize share: 1/2 (China Academy of Traditional Chinese Medicine, Beijing, China) - "for her discoveries concerning a novel therapy against Malaria"

The 2015 Nobel Prize Edition Newsletter of
The GP-TCM Research Association



Telephone interview - "Good News for the National Holiday!"

Telephone interview with Youyou Tu following the announcement of the 2015 Nobel Prize in Physiology or Medicine, 5 October 2015. The interviewer is Adam Smith, Chief Scientific Officer of Nobel Media. Professor Tu speaks in Chinese during the interview and the English questions and Professor Tu's answers are translated by Jin Li from the China Academy of Chinese Medical Sciences. <https://soundcloud.com/nobelprize/good-news-for-the-national-holiday-youyou-tu-on-being-awarded-the-nobel-prize>

The 2015 Nobel Lectures in Physiology or Medicine will be held on Wednesday 7 December 2015 at the Aula Medica, Karolinska Institutet. The lectures will be webcast live at Nobelprize.org. Videos of the lectures will also be available here a few days later.

Lasker-DeBakey Clinical Medical Research Award 2011 to Tu Youyou for the discovery of artemisinin, a drug therapy for malaria that has saved millions of lives across the globe, especially in the developing world. <http://www.laskerfoundation.org/awards/2011clinical.htm>.



Photos of Lasker Award ceremony of Tu Youyou in 2011, and celebration with family and friends.

Courtesy Dr Sho-Dong Wang 王守东.



NEW Nature and BBC reports on Tu Youyou's Nobel Prize

<http://www.nature.com/news/anti-parasite-drugs-sweep-nobel-prize-in-medicine-2015-1.18507>

<http://www.bbc.co.uk/news/blogs-china-blog-34451386>

NEW Nature 14 October 2015: World View article entitled "Consider all the evidence on alternative therapies" <http://www.nature.com/news/consider-all-the-evidence-on-alternative-therapies-1.18547>
Investigate and incorporate the mechanisms of complementary medicine instead of rejecting it outright, says Jo Marchant

WORLD VIEW

A personal take on events



Consider all the evidence on alternative therapies

Investigate and incorporate the mechanisms of complementary medicine instead of rejecting it outright, says Jo Marchant.

"Insane", "a joke", and "exactly the sort of thing the NHS should not be doing!" are a few of the Twitter responses to last week's news that Britain's Princess Alexandra Hospital NHS Trust wants to hire a reiki therapist for a hospital in Epping. On a salary of up to £22,236 (US\$34,000) a year, the appointed person "will provide Reiki/Spiritual healing to patients to enable them to cope with the emotional, physical and spiritual issues of dealing with their cancer journey".

Critics of the advert — and there are many — advocate instead what they call "evidence-based" approaches to health care. These critics should look again at the evidence — because it shows that to dismiss the benefits of alternative therapies is simplistic and misguided.

Let's be clear, I don't buy into the pseudoscientific claims of reiki and spiritual healers. There is no evidence that they can tap into and manipulate human "energy fields" to clear blockages and heal the body. Like many alternative therapies, these practices perform no better than placebos in clinical trials.

But that does not mean that such treatments have no distinct therapeutic value. To dismiss people's complex psychological and physiological reactions to serious illness — and how it is treated — as mere placebo effects is not helpful.

Neuroscience studies show that placebo effects can trigger significant physiological responses that are often identical to those created by drugs, ranging from the release of dopamine in the brains of people with Parkinson's disease to a rush of endorphins for those in pain.

The standard "evidence-based" argument is that this is irrelevant. Even if alternative therapies induce a biological response, sceptics argue, patients are still better off receiving trial-proven conventional treatments, because then they benefit from both a placebo effect and the active effect of the drug.

This logic misunderstands the nature of placebo effects. Not all placebos are the same, and alternative therapies can sometimes trigger larger responses than conventional ones do. For example, in one trial, fake acupuncture relieved pain more effectively than a fake pill (T. J. Kaptchuk *et al. Br. Med. J.* 332, 391–397; 2006); in another, it relieved symptoms of irritable bowel syndrome with fewer side effects than available drugs (T. J. Kaptchuk *et al. Br. Med. J.* 336, 999–1007; 2008). It is true that if a therapy cannot beat a fake version of itself in trials, it is not working as the therapist claims. But if it triggers a big enough placebo effect, it might still be the best treatment available.

If drugs are effective and placebo responses small, this does not matter much. But people tend to turn to alternative medicine for subjective, stress-related conditions such as chronic pain, depression, nausea and fatigue (all problems that can affect cancer patients in treatment). Drugs for these

conditions have significant downsides, such as unpleasant side effects and addiction, and placebo responses often account for most of the effect of the drug. So it becomes plausible that compared to popping a pill, a patient might get more relief — and fewer side effects — from an hour with a sympathetic therapist.

The benefits of therapies such as reiki and acupuncture go beyond what we normally think of as placebo effects, however. Alternative therapists do not get results just because they are particularly good at fooling people into thinking that they will get better. Many elements of the care they provide — from talking to touch — seem to have the power to relieve symptoms and even influence physical outcomes. These elements do not show up when therapies are compared against sham treatments, because they are present in both arms of a trial.

Such benefits can be indirect. For example, tackling patients' anxiety during invasive procedures such as keyhole surgery can reduce the risk of dangerous fluctuations in heart rate. This results not only from the direct effects on physiology, but also probably from patients needing lower doses of sedatives and painkillers.

Conventional medicine, with its squeezed appointment times and overworked staff, often struggles to provide such human aspects of care. One answer is to hire alternative therapists.

This ensures that such therapies are regulated, and that patients also get the conventional treatment they need. Such 'integrative medicine' is now offered by dozens of major US academic medical institutes. The Stanford Center for Integrative Medicine in California offers acupuncture to help

with chemotherapy side effects. If this helps patients to complete a conventional treatment by making those symptoms bearable, one therapist there told me, it might improve survival rates, too.

Critics say that this is dangerous quackery. Endorsing therapies that incorporate unscientific principles such as auras and energy fields encourages magical thinking, they argue, and undermines faith in conventional drugs and vaccines. That is a legitimate concern, but dismissing alternative approaches is not evidence-based either, and leaves patients in need.

Instead of rejecting such approaches wholesale, let's learn from them. That means going beyond the simplistic practice of jettisoning anything that cannot beat placebo. We must tease out the real active ingredients of these therapies — things such as ritual, mental imagery, empathy, care and hope — so that we can learn how they work and find ways to incorporate them into patient care. ■

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Now In the pages of *Nature*, a full-throated defense of “integrating” quackery into medicine
<http://scienceblogs.com/insolence/2015/10/15/in-the-pages-of-nature-a-full-throated-defense-of-integrating-quackery-into-medicine/>

Now **Science 16 October 2015: Nobel for antimalarial drug highlights East-West divide**
<http://www.sciencemag.org/content/350/6258/265.full>

The question at last week's press conference announcing the Nobel Prize in Physiology or Medicine sparked a frisson of tension in the staid Stockholm hall. Referring to the award of half of the prize to pharmacologist Youyou Tu for deriving the antimalarial drug artemisinin from a plant used in traditional Chinese medicine (TCM), a Chinese reporter asked: “Can we say this is the first time you award [recognition to] TCM?” “We are not giving a prize to traditional medicine,” shot back Hans Forssberg, a member of the selection committee. TCM was a source of inspiration, he explained, but the prize was for discovering a new drug.

That message was widely missed, especially in China. The laureate—at the China Academy of Traditional Chinese Medicine in Beijing—proclaimed artemisinin “a gift from TCM to the world,” in an interview with Xinhua News Agency. Xinhua also quoted a congratulatory letter from Premier Li Keqiang saying the Nobel “marks a great contribution of traditional Chinese medicine (TCM) to the cause of human health.” Encompassing herbal medicine, acupuncture, and other practices based on principles dating back 2000 years, TCM is big business in China, generating \$95 billion in revenue in 2014.

Commentators outside China also saw a victory for alternative medicine in the award, which Tu split with two other scientists, who derived an antiparasitic drug from a soil bacterium. “Nobel Goes to Pioneers of Natural-Based Medicines,” read a headline on the NBC News website. The Association of Accredited Naturopathic Medical Colleges, based in Washington, D.C., portrayed the award as an endorsement for its practitioners' embrace of acupuncture, herbalism, and other natural remedies. “Naturopathic Medicine is front and center for this year's Nobel Prize in Medicine,” the group boasted on Facebook.

In fact the award exposes a widening rift between the biomedical mainstream and proponents of alternative therapies. Yi Rao, a neuroscientist at Peking University in Beijing, calls Tu's recognition well-deserved: artemisinin has saved millions of lives, and Rao believes more gems will be found among TCM's formidable formulary. But it will take scientific methods to discover those gems, he says. Claims of benefits for TCM herbal recipes themselves “have never been proven.”

Drugs derived from natural products make up a significant part of the modern pharmacopeia, but so far few of them came from TCM. Ephedrine, an amphetamine-like stimulant used in over-the-counter decongestants and prescription medications for asthma, was isolated from the Chinese medicinal herb ma huang (*Ephedra sinica*) in the 1880s. In recent decades, TCM has yielded both artemisinin and arsenic trioxide, a treatment for acute promyelocytic leukemia.

Many groups are trying to extend the list of TCM-derived drugs. A screening effort at the Hong Kong University of Science and Technology (HKUST) launched in 1999 has produced “a portfolio of promising drug leads for the treatment of brain diseases and disorders,” says Sejal Mody, a researcher at HKUST's Biotechnology Research Institute. A similar screening effort called the Herbalome Project, started in 2008 at the Dalian Institute of Chemical Physics, has found a promising painkiller in *Corydalis yanhusuo*, a flowering plant. Described in *Current Biology* in 2014, the compound, dehydrocorybulbine, is undergoing further study. Project director Xinmiao Liang says several other active compounds are being tested in animals.

TCM's practitioners say, however, that no single compounds can explain the effectiveness of their remedies. Instead TCM relies on mixtures of ingredients, tailored to a patient, working synergistically. But rigorously testing such customized mixtures isn't easy. One much-touted example is the individualized TCM concoctions used throughout the world to ameliorate the toxicity of cancer chemotherapy. To test their effectiveness, Tony Mok, a clinical oncologist at the Chinese University of Hong Kong, ran a trial in which cancer patients received either a customized prescription of TCM herbs or similarly prepared placebo. His team found that the TCM preparations had no effect on toxicity.

Alternative medicine skeptic Edzard Ernst, formerly of the University of Exeter in the United Kingdom, has scoured the literature for similar rigorous trials of individualized TCM treatments; the few he has found were all negative. There is “no convincing evidence to support the use of individualized herbal medicine in any indication,” he says.

TCM proponents say it's a matter of getting the recipes right. The key is “the application of a holistic approach, namely, the use of standardized TCM formulas,” says Tianhan Xue, a natural products chemist in California who has worked on TCM-based drug discovery. He claims there is lab evidence of a synergistic effect when using combinations of herbal materials. “Though I do agree that we need more quality studies,” he says.

“Quality science is the only solution,” Mok says. “But once science is in, is it still TCM?”

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NEW **Sounding Board:** This section is reserved for GP-TCM RA members to express their opinions, share their views and comment on publications in previous issues of the GP-TCM RA Newsletters. All members are sincerely invited to contribute proactively. Please e-mail your Co-Editors Dr Tai-Ping Fan (tpf1000@cam.ac.uk) and Dr Qihe Xu (qihe.xu@kcl.ac.uk).

Tai-Ping Fan writes:

I have recently been interviewed by Rebecca Davis, a reporter with Agence France-Presse in Beijing. In the wake of Tu Youyou's Nobel Prize win, they are currently writing a feature on the modernization of TCM in China and the future prospects of its integration into modern medical practice.

She wishes to discuss what appears to be a philosophical/methodological conflict at the heart of this question of how to "modernize" TCM – that of whether by treating its practices empirically, trying to standardize regimens and extract active ingredients, etc. ("westernizing" it), one destroys the very things (its "traditional" aspects) that may have made it effective in the first place.

- Can one apply Western methodologies to a fundamentally un-Western system?
- Is it worthwhile to, like Tu Youyou, identify and extract active ingredients in TCM brews, or is it, as many practitioners will say, a futile endeavor, as what matters is the mix of ingredients that function together as an inseparable whole?
- How might TCM productively modernize, and how does that path forward fit in with the one currently chartered by the Chinese government, with all its investments in the field?
- What opportunities may Tu's win have specifically opened up?

Please let us have your views, so we can have further discussions on these pages.