

PURER, LESS COSTLY DRUGS THROUGH NANOTECHNOLOGY

Few of us are aware that heavy metals, such as iridium and rhodium, are used in the chemical production process of many pharmaceuticals, from over-the-counter painkillers to antibiotics and antifungal drugs. Nanotechnology has brought marvelous advances to computers, electronics, and moving pictures; now it can help the pharmaceutical industry by making drug manufacturing a more efficient, less costly, and ultimately safer process. Dr. Bing Zhou (pronounced “jo”), a pioneering molecular scientist at Headwaters NanoKinetix, a research lab in Lawrenceville, New Jersey, has patented a new chemical process using nanotechnology that can bring pharmaceuticals out of the “dark ages” of chemical catalysis, which can leave trace amounts of contaminant metals in the product.

Drug manufacturers typically use a method known as homogeneous catalysis to produce oral and topical medications. This involves mixing a liquid catalyst comprised of heavy metals such as palladium, platinum, iridium, rhodium or ruthenium. When these elements mix with the liquid to produce the final drug, it is very difficult to filter out the metals completely. Trace amounts remain in the drugs we take. While ingested in minute quantities, these metals are not broken down or excreted from the body and could build up over time.

Drug manufacturers have used this process for decades. Alternative methods which use a solid catalyst, known as heterogeneous catalysis, exist but none have been sufficiently reliable to replace homogenous catalysts until now. Dr. Zhou’s new method, heterogeneous catalysis using nanotechnology and a solid catalyst (rather than mixing liquids as manufacturers now do), keeps more of the heavy metals out of the product and, therefore, out of your body.

Dr. Zhou believes that drug manufacturers should begin now to adapt this technology to stay ahead of the curve. Just as the market for organic produce has grown rapidly over the past decade, people's concern for their long-term health will provide a growing market for "contaminant-free" drugs. Dr. Zhou hopes his method will one day become the predominant means of manufacturing drug chemicals. "I see the next few years as a transition from the current "low tech" version of drug manufacturing to the purer, more efficient and less costly method available through nanotechnology."

For more information on Dr. Zhou and his work in nanotechnology, visit www.bing-zhou.com.

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