

No Simple Rx for Developing a Medication Scientists Look for Ways to Control Asthma

A new medication is seldom really new-the search for a new drug usually starts 10 or 15 years before it is ready for patients to use.

For example, scientists at the Merck Frosst Centre for Therapeutic Research in Montreal have been working for 13 years on a new way to control asthma. This chronic disease is caused by inflammation and constriction of bronchial tubes in the lung, which make it difficult to breathe. Asthma affects 5 to 10 percent of the Canadian population.

Some existing asthma medications have serious side effects, and others work only after an asthma attack. It would be far better to stop the asthma reaction from occurring at all, and that may finally be possible.

In 1979 a group of Swedish scientists identified the compounds — called leukotrienes (LT's) — that are responsible for constricting bronchial tubes. Everyone has LT's, but an asthma attack involves an unusually high production of them.

Scientists at Merck Frosst realized that this discovery could lead to a safe way to prevent asthma attacks, and they began exploring two possible approaches.

One involves making compounds to inhibit the enzymes that produce too many LT's.. That would prevent the LT excess that can trigger an asthma reaction.

The other approach has been to make compounds (called LT receptor antagonists) that attach themselves to the tissue sites that LT's are looking for. By getting there first, they prevent the LT's from settling in and constricting the tissues.

Both approaches-as in any search for a new medication-start with organic chemists who find or create compounds that might work. They start either with natural sources, such as plant extracts, or with synthetic chemical compounds.

Testing and refining the compounds can be a long process-only 1 in 10,000 will have the properties needed.

When a compound has passed a variety of tests for activity, non-toxicity, solubility, and so on, then pharmacy researchers take over. These researchers include analytical chemists to study the compound's purity and how well it is absorbed by the body, and physical chemists to study the compound's physical properties and stability.

Eventually they decide on the best form for the new medication-pill, capsule, aerosol, etc. Finally, the drug is ready for testing on human patients which may take months or years.

The Merck Frosst scientists have developed compounds both to prevent an excess production of LTs, and to stop excess LTs from causing an attack.

It is a long process, but a new asthma -therapy is within sight.