New Anti-infective Drugs with Punch

I've written before about the contribution that academic science can make to drug discovery [*see Heterocyclic Chemistry e-book*] and at the University of Strathclyde we're now beginning to see the real benefits. In a university we can take on projects that are perceived as too risky for industry at an early stage and combine the quest for new drugs with basic scientific discovery. That's the Strathclyde philosophy. In terms of the applications of heterocyclic chemistry, our most advanced programme is producing anti-infective compounds for a number of key diseases, especially bacterial and parasitic infections.

On July 13th MGB-BP3, our lead antibacterial drug developed by our partner company, MGB Biopharma, began phase 1 clinical trials in a formulation designed to treat *Clostridium difficile* infections. MGB Biopharma has also developed an intravenous formulation for the treatment of other Gram-positive bacterial infections building upon basic science from the University of Strathclyde [see http://www.mgb-biopharma.com]. MGB-BP3 is the first in a line of new anti-infective compounds that ultimately work by controlling gene expression by binding to the minor groove of DNA in the target organism, according to the best evidence we have. It's one of a family of compounds that we call Strathclyde MGBs (S-MGBs).

We now have S-MGBs that are effective against a wide range of infectious organisms in particular Gram-positive bacteria and trypanosomes, the disease causing agent of sleeping sickness. We've been able to make such progress and to create such impact for several reasons. Firstly the S-MGB platform uses very flexible heterocyclic chemistry so that we can tune the properties of our compounds to target different pathogens whilst remaining safe for the infected host. Secondly, we have strong team-work between many academic colleagues in chemistry and biology at Strathclyde but also at the University of Glasgow. Thirdly, we've worked in partnership with MGB Biopharma; the company's ability to raise funds in a difficult economic climate and to drive through the development programme for MGB-BP3 has been extraordinary.

The outcomes of our research are not just the important practical applications but the advancement of the underlying science. For example, we are developing new chemical technologies to synthesise the compounds we need to evaluate. Also in studying the effect of our drugs on the target bacteria and parasites we are discovering more about the internal workings of the infectious organisms. With such information available we would hope to devise new and more effective drugs for infectious disease.

Caption Left: MGB-BP3 formulated in capsules for treating *Clostridium difficile.* Right: a freeze-dried sample of MGB-BP3 for reconstitution as an intravenous medicine (courtesy MGB Biopharma).

Logo and contact details as in previous profiles.