

Are Generic Anti-infectives Effective?

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Generic products have been defined as “a drug product that is comparable to brand/reference listed drug product in dosage form, strength, route of administration, quality and performance characteristics, and intended use.” They are usually produced after the patent held by the manufacturer of the innovator product has expired.

Drug efficacy is directly related to the achievement of suitable concentrations of the drug at the target tissue and for most orally administered drugs the target is the plasma. In the last 3 decades or so, the concept of bioequivalence has been accepted as indicative of equivalence in therapeutic efficacy of 2 products. In general, it is quite readily understood that the presence of the same amount of the active ingredient in 2 products (pharmaceutical equivalence) does not indicate bioequivalence as differences in the excipients and/or manufacturing process can lead to difference in the dissolution and absorption of drug. However, just the achievement of suitable and equivalent plasma levels as the originator/comparator drug also does not mean bioequivalence. Bioequivalence requires the achievement of suitable plasma levels at similar times, for similar duration and to the same extent as the comparator drug. Thus, bioequivalence is claimed only when 2 drugs have the same (within acceptable limits) of C_{max} (maximum concentration attained), T_{max} (time taken to achieve maximum concentration) and Area Under the Curve or AUC (which is indicative of total bioavailability).

Drug regulatory agencies throughout the world have the responsibility to ensure the bioequivalence of generic products with the innovator product. This becomes more important for drugs with narrow therapeutic index and those that have known bioavailability problems. With effect from 1st January 2012, the Malaysian Drug Control Authority (DCA), Ministry of Health Malaysia, has made it mandatory that all generic products in oral solid dosage form (that have to be swallowed i.e. not dispersible granules or tablets) containing Controlled Medicines (Scheduled Poisons) must have bioequivalence data. Prior to this, bioequivalence data was mandatory for only 141 drugs which included drugs with a narrow therapeutic index, those with known pharmacokinetic problems, drugs for which complaints from end-users were received etc. Interestingly, almost 25% of the drugs on that list were anti-infectives which included antibacterial, antifungal and antiviral drugs.

Anti-infectives are important components of the armament of surgeons for the treatment (and to a lesser extent) the prophylaxis of infections consequent to surgery. Surgeons need to be confident that generic anti-infectives will provide similar quality and performance for its intended use as the innovator product. This is especially so, as patients who require surgery are often weak, nutritionally compromised and with weakened immune and defence mechanisms. In the light of the decision of the DCA to mandate bioequivalence studies for all generic drugs containing Controlled Medicines (which includes all anti-infectives), generic drugs that are available in Malaysia can be used with confidence that they are as effective as the innovator product.