

APPLICATION NOTE

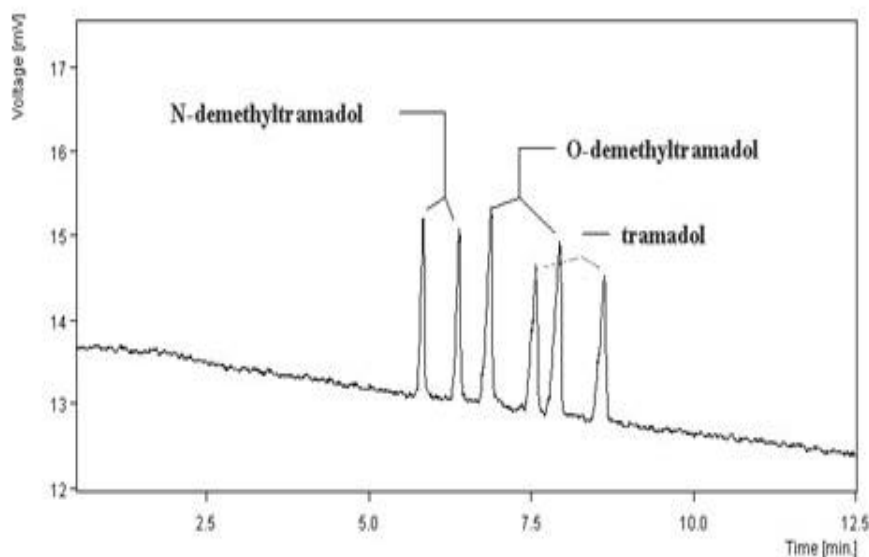
Application Note : 015

Title of application :

Simultaneous chiral separation of tramadol and its metabolites

Area of application :

Chiral separation/pharmaceutical analysis



Conditions :

Buffer	Chiral01, pH=3.0
Sample	Standard mixture consisting of tramadol, N-demethyltramadol and O-demethyltramadol
Capillary	50 μm i.d, 50 cm length;
Injection mode	Hydrodynamic injection
Separation setting	+ 20kV
Instrument used	CE-L1, UV detection at 210 nm

Description :

Chiral separation of drugs by high-performance liquid chromatography (HPLC) can be very costly, due either to the usage of an expensive chiral column or to the need for a large amount of chiral modifier for the mobile phase. Moreover, the chiral resolution achieved with HPLC is often mediocre because of the limited column efficiency of HPLC.

Capillary electrophoresis (CE) is particularly useful in chiral analysis. This is because chiral separation by CE involves essentially the formulation of a running buffer that is of chiral discriminating capability. The small volume for the buffer (typically a few milliliters) means even relatively expensive chiral additives can be employed. Furthermore, changing chiral selectivity in CE can be realized by simply flushing out the original running solution and refilling with the new one. This enables a rapid identification of the optimal chiral separation conditions. Convenience in

the optimization of the chiral discriminating system, combined with its intrinsic high column efficiency, often makes CE to be the most cost effective approach for implementing the chiral separation of a number of compounds, especially pharmaceuticals.

Here, the exceptional performance of CE is exemplified by the simultaneous chiral separation of tramadol, an analgesic drug, and its *N*-demethyl and *O*-demethyl metabolites.