APPLICATION OF THE QUANTITATIVE DETERMINATION OF NAPROXEN IN HUMAN PLASMA BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY WITH DAD

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Naproxen is a derivative of propionic acid which inhibits the cyclooxygenase enzyme and is widely used to treat patients with rheumatoid arthritis. It has antiinflammatory, analgesic and antipyretic activity.

In the study, HPLC/DAD system was used for the quantitative determination of naproxen in human plasma by means of method which was developed and validated originally in Novagenix Bioanalytical Drug R&D Center. Naproxen was extracted by liquid-liquid method from human plasma and calibration curve was obtained with 0.5-200 ng/mL concentration interval. Agilent HP 1100 HPLC system with Spherisor S 5ODS2 C18 (250.0 x 4.6 mm ID, 5 um) analytical column and S 5 ODS2-10C guard column were used to perform experimental procedures.

Retention times of naproxen and diclofenac sodium (used as internal standard) were obtained as 4.75 and 8.85 minute, respectively. During analysis any interferences were observed. Absolute and relative recovery results were 98.15- 92.23 % respectively. Correlation constants were calculated as 0.99615 -0.99863 after 5 day validation study. Quality control samples used in validation study have batch to batch and within batch mean accuracy ranges are 88.760- 107.622 % and 103.91-85.68%. Precision values (CV%) of those parameters for naproxen were 7.27-3.19% and 8.81-0.58% respectively. Batch to batch statistics for mean accuracy ranges of calibration standard samples were 106.55-93.44% and precision values (CV%) 6.37-1.56% respectively. Determined results were in the range of validation parameters pointed out in FDA Guidance 2001.

Clinical study was carried out with 24 healthy volunteers to determine the pharmacokinetics profile of two different brand named drug which are available actually in national drug market. Originally developed and validated method was simple, sensitive, rapid and suitable for the analysis of naproxen in blood samples taken during clinical studies. As a result, our method is appropriate and useful for the determination of naproxen in human plasma in terms of bioequivalence studies.

REFERENCES

