

## HPLC DETERMINATION OF DRDE-07 IN MICE PLASMA: PROBABLE ANTIDOTE FOR SULFUR MUSTARD TOXICITY

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□ DRDE-07 is a new synthetic compound found to be the most prophylactic agent against sulfur mustard toxicity. In this study, the development and validation of a high-performance liquid chromatography (HPLC) assay for determination of DRDE-07 concentration in mice plasma for pharmacokinetic studies is described. A simple protein precipitation procedure by ice cold acetone was applied to extract DRDE-07 from plasma. The intra-day and inter-day precision of DRDE-07 ranged from 1.75% to 4.38% and from 1.07% to 3.21%, respectively. Similarly, the intra-day and inter-day accuracy of DRDE-07 ranged from 95.56% to 100.07% and from 95.69% to 101.02%, respectively. The extraction recovery of DRDE-07 was  $96.87 \pm 1.89\%$  at  $1.0 \mu\text{g/ml}$  ( $n = 3$ ),  $96.43 \pm 1.41\%$  at  $10 \mu\text{g/mL}$  ( $n = 3$ ), and  $88.26 \pm 1.49\%$  at  $100 \mu\text{g/mL}$  ( $n = 3$ ). Calibration curves of DRDE-07 were linear in the concentration range of  $1\text{--}100 \mu\text{g/mL}$  in plasma. The limit of quantification was  $1 \mu\text{g/mL}$ . This method was applied to determine DRDE-07 concentration in mice plasma samples for a pharmacokinetic study.

Q2 **Keywords** DRDE-07, HPLC, pharmacokinetics, sulfur mustard, validation 20

### INTRODUCTION

Bis(2-chloroethyl)sulfide, commonly known as sulfur mustard (SM) or mustard gas, is an alkylating agent that causes serious blisters upon contact with human skin. Inhalation of vapor may result in bronchitis, necrosis of the respiratory epithelium, and broncho-pneumonia. SM is a frequently used chemical warfare agent and several reports are available for its recent use.<sup>[1–4]</sup> Simple synthesis, easy stockpiling, and the toxic nature of SM and lack of effective antidote, make this chemical a threat worldwide. There is

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