1A. Title of research:
Stereoisomer concentrations of amphetamine, amphetamine derivatives and metabolites in saliva, and plasma utilizing a validated stereoselective gas chromatography mass spectrometry (GCMS) assay.

1B. Introduction:
Amphetamine (AM), methamphetamine (MA), methylenedioxymethamphetamine (MDMA), methyenedioxyamphetamine (MDA) are chiral molecules as its major metabolite, 3-hydroxy-4-methoxymethylamphetamine (HMMA). These drugs are commonly abused as stimulants and have a wide range of effects on the nervous system. When abused in their racemic form (1:1 ratio of R- and S- enantiomers), the metabolism of these drugs is stereoselective. Therefore the drugs are present in body fluids in varying ratios of R- and S- enantiomers. The determination of these ratios is of great benefit to pharmacokinetic, forensic and toxicological studies. This study aims to determine the concentrations of the R- and S- enantiomers of these drugs utilizing a highly sensitive and specific gas chromatography mass spectrometry assay. Plasma, urine and saliva samples will be analysed to compare the concentrations of the enantiomers in each of the matrices.

1C. Objective
i) General Objective: To develop a validated GCMS method for simultaneous stereoselective deteminations of AM, MA, MDMA, MDA and HMMA in saliva, urine and plasma.

ii) Specific Objectives:
1. To determine and compare AM, MA, MDMA, MDA and HMMA enantiomeric concentrations in saliva, urine and blood samples obtained from known abusers.
2. To evaluate the suitability of GCMS as a selective, accurate and sensitive assay for AM, MA, MDMA, MDA and HMMA in biological samples.

1D. Expected Outcomes
1. A sensitive, accurate and selective method for the stereoselective determination of AM, MA, MDMA, MDA and HMMA enantiomers in saliva, urine and plasma will be developed.
2. Data to evaluate the applicability of saliva as an alternative sample for the determination of AM, MA, MDMA, MDA and HMMA enantiomers in saliva, urine and plasma.
3. A comparison of concentrations of AM, MA, MDMA, MDA and HMMA enantiomers in the various sample matrices.