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## Determination of urea in clinical samples

### Introduction

Urea is a major product of protein metabolism, and is found in most physiological samples. Consequently its analysis is a useful index for nutritional and health status. Normal values are: plasma 10-50 mg/100ml, urine 20-35 g/24hrs.

### Principle

Urea is hydrolysed to ammonia and carbon dioxide in the presence of urease. Ammonia reacts with axoglutarate in the presence of NADH, which is oxidised and measured at 340nm.

### Method

The reagent can be prepared ready for use or obtained as a kit (Randox Labs. UK)

Pipette 1 ml of reagent containing:

Urease 20U/ml  
GLDH 5U/ml  
NADH 0.34mmol/l  
2-oxoglutarate 14 mmol/l  
Adenosine-5-diphosphate 0.5mmol/l  
Tris buffer 150mmol/l, pH 8.5

into each of 2 disposable cells (80-2004-53).



## Libra S21/S22 operation

- Select Basic Modes (1)
- Select Concentration  
Select Wavelength= 340 press OK (F3)
- Enter Factor 191 press OK (F3)
  - This sets the spectrophotometer to read directly in concentration units (mg/100ml)

Add 0.02ml of sample and 0.02ml water (for the blank analysis) respectively and mix.

After 15 minutes at 20-25°C:

- Insert blank cuvette and press green run key.
- Insert sample and press green run key. The absorbance difference gives concentration directly.
  - A single blank as above suffices for subsequent analyses in the same series.

(For assays where there is no established concentration factor, calibration should be carried out using prepared standards.)

Printouts may be obtained by setting up the printer options in System Utilities and Preferences (3) prints results. This is automatic with autoprint.

Additionally press **.** to print result if auto-print is off, or to re-print result if auto-print is on

The above procedure can be easily used with other instruments in the Libra range

## Ordering Details

Libra S5	80-2115-00
Libra S11	80-2115-15
Libra S12	80-2115-10
Libra S21	80-2115-25
Libra S22	80-2115-20
Libra S32	80-2115-30

The reaction can be accelerated for increased sensitivity if warmed. For this purpose the Libra S21/S22 have the following accessories:

- 8 position water heated cell changer (80-2109-70) used with an external heating bath
- 6 position Peltier heated cell changer (80-2106-04) and Temperature Control Unit (80-2112-49)
- Single position water heated cell holder (80-2106-08) used with an external heating bath
- Single position electrical cell holder (80-2106-12), temperatures selectable from 25, 30 and 37°C
- Single position Peltier cell holder, temperatures selectable over the whole range from 20-49°C (80-2106-13).

The Sipper (80-2112-25) enables some automation of the analyses, and can be used together with a heated (not water heated) or non-heated single cell holder.