

SAULT COLLEGE
of Applied Arts and Technology
Sault Ste. Marie

COURSE OUTLINE

CHM-220-2
BIOCHEMISTRY (LAB)

revised June, 1981 by D. Heggart



BIOCHEMISTRY

CHM 220-2

Biochemistry Laboratory (CHM 220-2) is a one semester course (15 weeks), 3 hours per week. The following topics serve as the basis for the laboratory work:

I. Natural Product

- a) isolation and study of caffeine
- b) isolation and characterization of narigin
- c) isolation and characterization of selected carbohydrates

These first experiments will introduce the students to:

- 1) solvent extraction
- 2) chromatography a) column
b) two dimensional paper
c) thin layer
- 3) combustion analysis
- 4) nuclear magnetic resonance
- 5) Qualitative analysis via spot tests
- 6) Qualitative Ultraviolet Spectroscopy
- 7) Polarimetry
- 8) Periodate Analysis
- 9) Reducing Power Analysis - Nelson's Test

II. Kjeldahl Semi-Micro Nitrogen Determination

The student will analyze a sample of acetanilide as well as a cheese sample for percent nitrogen. Analysis done in triplicate.

III. Bioassay - see attached.

BIOCHEMISTRY

News Item. "Hundreds of sheep lie dead on desert grazing land in Western United States. Has this herd been decimated by a new leak of military nerve gas? It happened once before in 1968 (1). A government spokesman says no, the sheep were killed by the weed Halogeton which was found in their stomachs. Some unknown toxin apparently entered the blood stream and deposited crystals in the kidneys. The crystals perforated the kidneys and caused the death of the sheep."

OBJECTIVES:

The student will:

- 1) extract the toxin from the weed Halogeton glomeratus.
- 2) perform a bioassay on the extract.
- 3) determine the chemical formula of the toxin.

ASSIGNMENTS:

- 1) Identify 4 possible methods of extraction and suggest the best method for the extraction of the toxin from Halogeton glomeratus.
- 2) What is a bioassay? Design a bioassay for this toxin using readily available species.
- 3) From the given CHN data, determine the empirical formula.

(1) Van Kampen, K. R. et al J. Amer. Veterinary Medicine Assoc., 154, 622 (1969)