Bulletin 24 – Summer 2008

Creating a bank of plant-based research projects for final year students

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Project template for plant-based research project bank.

HGP CETL-AURS Project

University of Reading

Plant-based project templates for Part 3 students

Project proposed by:
Tel.:
E-mail address:

Project title: The search for novel compounds to treat antibiotic-resistant Gram positive pathogenic bacteria

Academic supervisor(s):

Assistance from postgrad/postdocs:

Project description (max 150 words):

- **Objective/hypothesis**

The rise in widespread infections caused by antibiotic-resistant bacteria, such as methicillin-resistant *Staphylococcus aureus* (MRSA), has increased the need for novel sources of antimicrobial compounds. Many plant species are known to contain antimicrobial compounds (Cowan, 1999), some of which have a synergistic action when combined with compounds from other plant species (Abu-Shanab, 2004). This project aims to screen a selection of plant-derived compounds for antimicrobial activity in the search for new sources of antibiotics.

- **Methodology**

Crude plant extracts will be prepared using various solvents (water, ethanol, methanol) and assayed for antimicrobial activity in solid and liquid media. The antimicrobial effects of single-species and multiple-species plant extracts will be tested and inhibition zones and minimum inhibitory concentrations determined. If time allows, the active compounds from the crude plant extracts will be isolated using chromotographical methods.

- **Expected outcomes**

Identification of plant species with potential for development of novel antimicrobial compounds.

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References:
Cowan, M.M. (1999) Plant products as antimicrobial agents. Clinical Microbiology Reviews Vol. 12(4): 564-582
Abu-Shanab, B. et al (2004) Antibacterial activities of some plant extracts utilised in popular medicine in Palestine. Turkish Journal of Biology Vol. 28(2/4): 99-102

No. of students: 1

Degree programme(s) for which project is suitable: Microbiology, Botany, Biological Sciences.

Pre-requisites/skill levels required (e.g. technically difficult/moderate/easy, intellectually difficult/moderate easy): Technically moderate, intellectually easy.

Teaching and learning outcomes (e.g. will learn method of quantifying platelet aggregation): Will learn how to isolate compounds from plant material and assay antimicrobial activity.

Resources required (e.g. plant species, glasshouse space): Facilities for growth of appropriate plants, facilities for isolation of compounds from plants, general microbiological facilities.

Technical assistance provided by:

Estimated cost:

- £50 ☐ £100 ☐ £150 ☐ £200 ☒ £250 (special cases) ☐

Health and safety information: This project involves the use of Category 2 pathogenic bacteria.

Potential developments for future projects (e.g. alternative species): Provide preliminary data which could be used for future projects.

Please return completed templates to Jo Smith via e-mail or internal post.