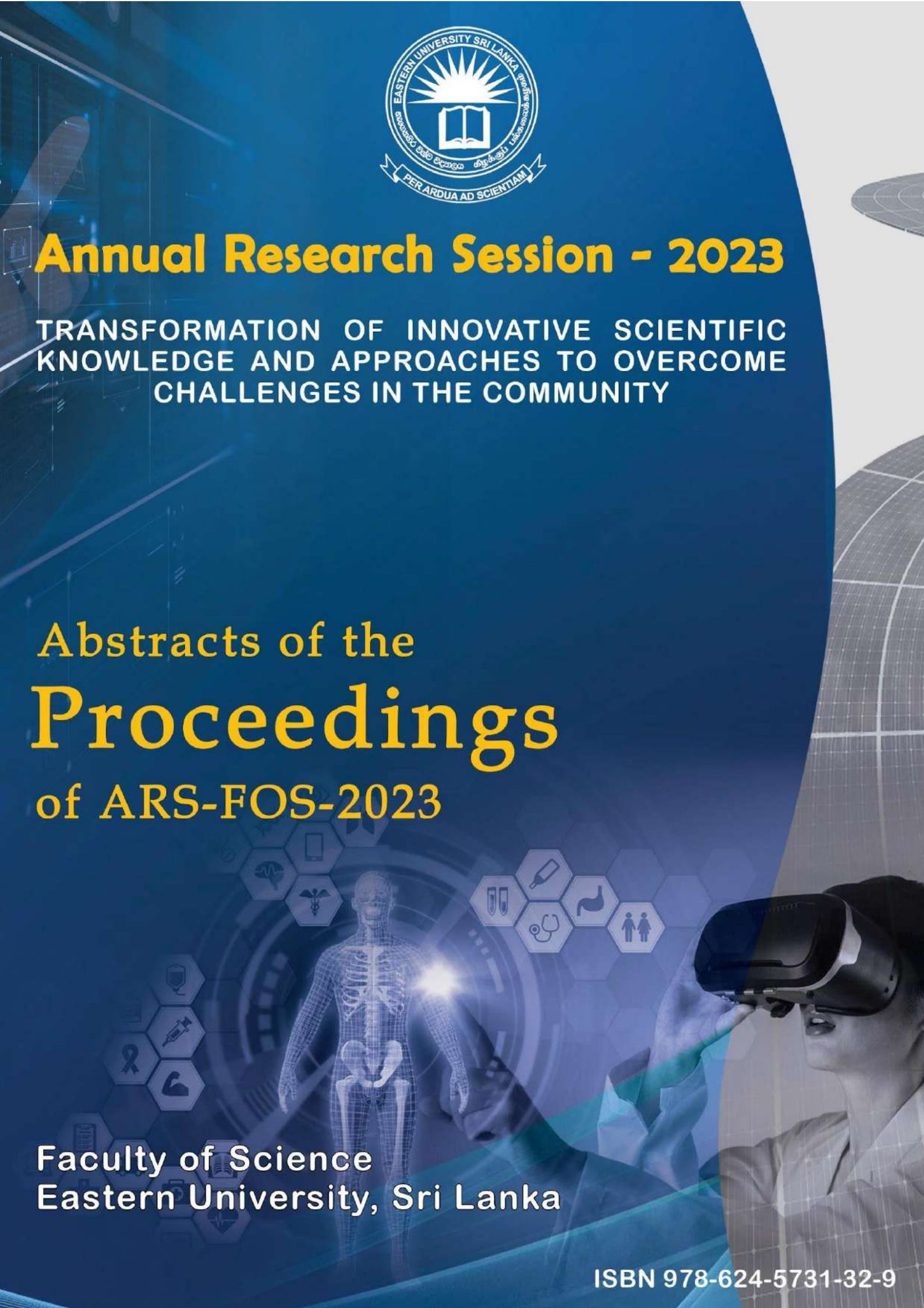
# Annual Research Session - 2023

## TRANSFORMATION OF INNOVATIVE SCIENTIFIC KNOWLEDGE AND APPROACHES TO OVERCOME CHALLENGES IN THE COMMUNITY

# Abstracts of the Proceedings of ARS-FOS-2023



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# An Anti-*Sitophilus oryzae* Bioactive Substance's Identification And Analysis From Plant Extracts

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**Abstract.** The majority of the drug industry's work involves the discovery and analysis of bioactive substances. Drugs derived from plants have more potential than those derived from chemicals. Some pesticide compounds are prohibited from importation into Sri Lanka. Therefore, it is more convenient to search for natural insecticides than synthetic chemicals. The pest known as *Sitophilus oryzae* ruins rice kept in storage.There are plenty of medicinal plants which act as therapeutic agents. Using conventional herbal remedies including *Lantana camera* (leaf), *Carica papaya* (seeds), *Ricinus communis* (leaves), *Calotropis giganta* (flowers), and *Gliricidia sepium* (leaves), and methanol as solvents (1:10 w: v), it has been achieved to identify plants' insecticidal properties. The best pesticide plant, among the selected plants, according to a one-week observation on mortality, was *Gliricidia sepium* (leaves). To display the results of the total experiment, which also included information on the control test, a survival analysis test was used. With the aid of a gradient solvent system, chromatographic separations were used to fractionate *Gliricidia sepium* leaf extracts. Overall, twelve fractions were gathered, and a mortality test took place to figure out the most bioactive fractions under lab environments. The potential anti-*Sitophilus oryzae* ability was demonstrated from fraction eleven. Continuously, instrumental analysis was used to describe and pinpoint a specific bioactive component. In accordance with the results of the FTIR analysis, four significant peaks were found, and they corresponded to the presence of the O-H bond, C-H bond stretching, -CH3 bending, and C-O stretching at frequencies of 3338.14cm$^{-1}$, 2939.41 cm$^{-1}$, 1411.59 cm$^{-1}$, and 1011.08 cm$^{-1}$ respectively. Additional GC-MS analysis, when combined with NIST library data, revealed the potential structure and mass fragments of anti *Sitophilus oryzae*. Briefly, the mass to charge proportions for $[C_7H_3]^{11\cdot}$, $[C_7H_{11}O_3]^{3\cdot}$, and $[C_7H_8O]^{6\cdot}$ have been observed in the CG-MS spectrum at m/z 87.0000, 143.071, and 108.508 respectively. Finally, in my research, I found that 4-c-methyl-myo-inositol was the anti-*Sitophilus oryzae* drug responsible.

***Keywords:*** *Gliricidia sepium, Sitiophilus oryzae, insecticidal activity.*

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