


PONDICHERRY UNIVERSITY

PUDUCHERRY

EXECUTIVE SUMMARY OF FINAL REPORT OF THE WORK DONE ON THE PROJECT

Title of the Project	“Evaluation and production of secondary metabolites of <i>Spilanthesacmella</i> L. - A valuable medicinal plant”.
Name and address of the Principal Investigator	Pondicherry University, Puducherry Department of Biotechnology Dr. N. Arumugam, Professor,
Name and address of the Institution	Pondicherry University, Puducherry – 605 014 R. Venkataraman Nagar, Kalapet,
UGC approval letter no. and date	F. No. 41-567 / 2012 (SR), Dt. 18.07.2012
Date of Implementation	18.07.2012
Tenure of the Project	18.07.2012 to 31.03.2015
Total Grant Allocated	Rs. 12,89,800/-
Total Grant Received	Rs. 12,36,793/-
Final Expenditure	Rs. 12,30,541/-
Title of the Project	“Evaluation and production of secondary metabolites of <i>Spilanthesacmella</i> L. - A valuable medicinal plant”.
Objectives of the Project	Micro-propagation of <i>Spilanthesacmella</i> and its evaluation for secondary metabolite production
Whether objectives were achieved (Give Details)	Yes
Achievements from the Project	Tissue culture propagation the medicinal <i>Spilanthes</i> plant for continued supply of plant material and evaluation of secondary metabolite production by the in vitro raised and plants established in the field
Summary of the Findings (in 500 words)	The species of <i>Spilanthes</i> available with us was identified to be <i>S. ciliata</i> . The plant is a perennial herb of global importance owing to the presence of an array of special compounds known as N-alkylamides, which are bioactive fatty acid amides that find application in skin creams, mouth gels and toothpastes. Despite multifaceted applications, a major limitation is the scarcity of contamination free plant source for its commercial application, fluctuations in active metabolites due to variation in extraction procedures and lack of rapid method for alkylamide profiling. In the current research the following has been achieved: (1) optimized conditions for mass propagation of

	contamination free plants of <i>S. ciliata</i> by tissue culture using leaf discs and nodal cuttings as explants, (2) established an optimum plant/solvent (w/v) ratio for maximum elution of alkylamides, (3) developed a rapid method for qualitative estimation of alkylamide from the in vitro raised and the field grown plants using LC-Q-TOF (HRMS), (4) isolated and characterized the active principle Spilanthol from flower heads of the field grown plants and (5) found that spilanthol content differed in different parts of the plant with the flower head harbouring the highest amount. To the best of our knowledge, this is the first report on profiling of alkylamides and quantitative estimation of Spilanthol in micro-propagated whole plant of <i>Spilanthessp.</i> The correlation pattern reported in this study may form the basis for using tissue culture raised plantlets of <i>S. ciliata</i> as potential source of bioactive alkylamides on industrial scale. Further research is required for quantification and characterization of other alkylamides present in the plant.
Contribution to the Society (give details)	Continuous production and supply of good quality <i>Spilanthes</i> plants by tissue culture for distribution to public for health care
Whether any Ph.D. Enrolled/produced out of project	No
No. of publications out of the project (Please Attach)	1 (See the attachment) 1. Bhat ZS, Jaladi N, Khajuria RK, Shah ZH, Arumugam N (2016). Comparative analysis of bioactive N-alkylamides produced by tissue culture raised versus field plantlets of <i>Spilanthes ciliata</i> using LC-Q-TOF (HRMS). Journal of Chromatography B 1017, 195-203.


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