

Chemical research should be a national priority

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Though Nepal has been active in natural product screening, the total national research effort is negligible. Little of the research that is carried out is appropriate for the natural and social constraints. Natural resources are being overlooked, and data that is collected is not thoroughly analyzed and reported.

Chemistry research in Nepal was initiated during the seventies, when it was made a requirement for the Masters degree at the Central Department of Chemistry (CDC), Tribhuvan University (TU). More than 130 theses have been completed so far, in addition to six Ph. D. dissertations and two dozens other research works conducted by the department faculty. While the number and impact of these studies has been slight, we should not conclude that the research has no value at all. Manandhar 2003, Bajracharya 1998, and Kharel 2000¹⁻³, for example, are valuable studies. Poudel (2002) reports on triterpenes and betunelic acid, molecules with anti-cancer and anti-HIV properties, that have been found in the giant dodder (*Cuscuta reflexa*), an annual parasitic herb indigenous to Nepal⁴; if extracted and refined, such pharmaceuticals could produce significant revenues. And there are thousands of other possibilities.

Raja R. Pradhananga, professor and head of CDC, understands the unsatisfactory situation of chemical research in Nepal. "By adding a course on research methods, we can make the three-year B. Sc. a more research-oriented degree program", says Pradhananga. "There should be a law that the income tax paid by national or international organization involved in science and technology is allocated to research and development." Finally Pradhananga concludes, "the nation should, as far as practicable, make Tribhuvan University the focus of research activities."

In addition to CDC, there are many established national research centers with adequate scientific manpower and well-equipped research laboratories. The Royal Nepal Academy of Science and Technology (RONAST), the Research Center for Applied Science and Technology (RECAST), and Tribhuvan University are the institutions most responsible for enhancing the science and technology through research. Although these organizations have ambitious scientific goals, their paltry contributions have hurt Nepal. RONAST, RECAST, the Ministry of Science and Technology (MOST), and the Ministry of Population and Environment (MOPE) have never been able to justify their existence.

During its two and half decades, RECAST has attempted a mere handful of research projects, and the titles have been more compelling than their results. Several of the research reports end with "not applicable at the moment," "budget not available in time" and "due to financial constraints, experimentation couldn't be done properly and study tour could not be taken"⁵

RONAST reports about forty research projects on natural resources and environmental analysis in the natural product and environmental analysis over the course of its twenty years. Many of them are concerned with the analysis of environmental parameters in Kathmandu Valley. Out of these, a few such as 'Pollution monitoring in the water supply system of Kathmandu City' by T. M. Pradhananga⁶, are considered significant. Pradhananga, chief scientific officer at RONAST, maintains, "Both government and scientists are responsible for the failure of the research and development programme. We the scientists could not convince them of the significance of science and technology and they could not understand us."

When a researcher lands a foreign project, RONAST greets it with bureaucratic meddling and roadblocks. A research project conducted under the auspices of RONAST by Wageningen Agricultural University (Netherlands) with the collaboration of Nepal Agricultural Research Council (NARC) and the Department of Biomolecular Sciences, was forced to tolerate intolerable bureaucratic impediments. The report concludes, "On many occasions, researchers are bogged down by bureaucratic administrative hurdles, due to which many field projects were cancelled. [I]n order to produce good results, a proper environment should be created, free from administrative hurdles; and the allocated budget should be released on a timely basis".⁷

K. D. Yami, the main investigator in this project and Chief Scientific Officer at RONAST, states: "The main reason for the failure of research programme is the chronic and unresolved conflicts embedded among the research personalities when they occupy high-level bureaucratic positions in different institutions. Most of the time, it is seen that neither the research personalities nor the government people identify the common and main problems. And their commitments always end only in seminar or meetings. RONAST, being an autonomous body, can conduct many more research activities comfortably if a favorable environment is created. But up to now, research institutions have not had a healthy relationship with

RONAST". She adds, "We have knowledge and programmes useful to society but the government policy hasn't given a high priority to science and technology, nor have the private sectors".

Only if we can move beyond the past conflicts between research institutes and between high officials can we advance in science. Nepal has over a dozen well-equipped and organized laboratories and adequate man-power. The laboratories of the Central Department of Chemistry, Natural Products, Royal Drugs Limited, Quality Control and Department of Food Technology, Nepal Standard and Quality Controls, RONAST, RECAST, Kathmandu University and Pokhara University, have advanced equipments. Tribhuvan University and other universities have already produced many M. Sc. graduates. The Nepal Chemical Society claims membership of more than 1500 chemists.

I would like to suggest two steps that might help promote scientific research. First, an interdisciplinary and high-level task force should be created, with members drawn from government and the private sector. Second, Nepal Chemical Society, in collaboration with CDC, should take the lead in research and publication activities as an open forum. ■

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