Academia-Industry Interaction: Need for research today

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"***Slow and steady wins the race.***
This is the version of the story that we've all grown up with."

“***Fast and consistent will always beat the slow and steady. It’s good to be slow and steady; but it’s better to be fast and reliable***.”

“***First identify your core competency and then change the playing field to suit your core competency***.”

***“It’s good to be individually brilliant and to have strong core competencies; but unless you’re able to work in a team and harness each other’s core competencies, you’ll always perform below par because there will always be situations at which you’ll do poorly and someone else does well*.**

The Critical Areas

The domains in which interaction is theoretically possible are:

- Industry support to basic research for knowledge creation
- Industry participation in technology development involving some exploratory work
- Academic intervention in solving specific industry problems
- Laboratory utilization by industry
- Continuing education programme

Industry Needs and Expectations

- Industry's enduring interest lies in ***targeted development.***
- Large scale industry expects and relies on academic intervention for ***minor technological innovation/modification*** aimed at technology absorption/ implementation
- Medium and small scale industry, looks toward academia for ***problem solving***, with support in the areas of newer dosage forms, process improvement and plant and machinery performance, etc.

Industry Needs and Expectations…….

The industry may also need academic intervention in-

1) ***Reverse engineering*** where the product exists and what is sought to be developed is a process to yield it.
2) ***Parallel exploration of a new product line*** triggering a focused developmental activity.
3) ***Product testing and production enhancement*** in terms of quantity and quality in case of industries involved in contract manufacturing.
4) Ancillary facility to medium and large scale industries.

Industry expectations….

In its interaction with the academia, industry's expected time frames are immediate, and investment is directed towards efforts that promise result-oriented solutions. The costing frames are typically guided by a reluctance to invest in technology R&D which has either long term or unclear outcomes……

However industry support to basic research is virtually non-existent…….

Academia Aspirations

For academicians, the primary focus of interest is invariably

1) a problem that throws up an ***intellectual challenge.***
2) Technology development initiatives.
3) Academic environments value the autonomy of the individual researcher.
4) Working towards creation of knowledge in specialized domains.
5) Multidimensionality of a problem leading to explore a variety of options to arrive at a solution.

Academic attributes……

- Academic research activity consumes both time and effort
- The result may often be inimical to what the industry would regard as a wholesome solution.
- Time frames governed also by research guidance and teaching priorities of the academic community.
- Globally, funding considerations orient academicians towards sponsored R&D activities, to sustain their broader research interests.

The Mismatch

- The gap between industry's needs and the academic community's aspirations is large.
- Unless technology driven initiatives find a surer place in the industrial sector in this country, the academia-industry interaction may remain confined to developmental activities with limited exploratory or research-based content.
- Critical mismatch in relative perceptions of the two on the issue of how technology development is to be achieved.

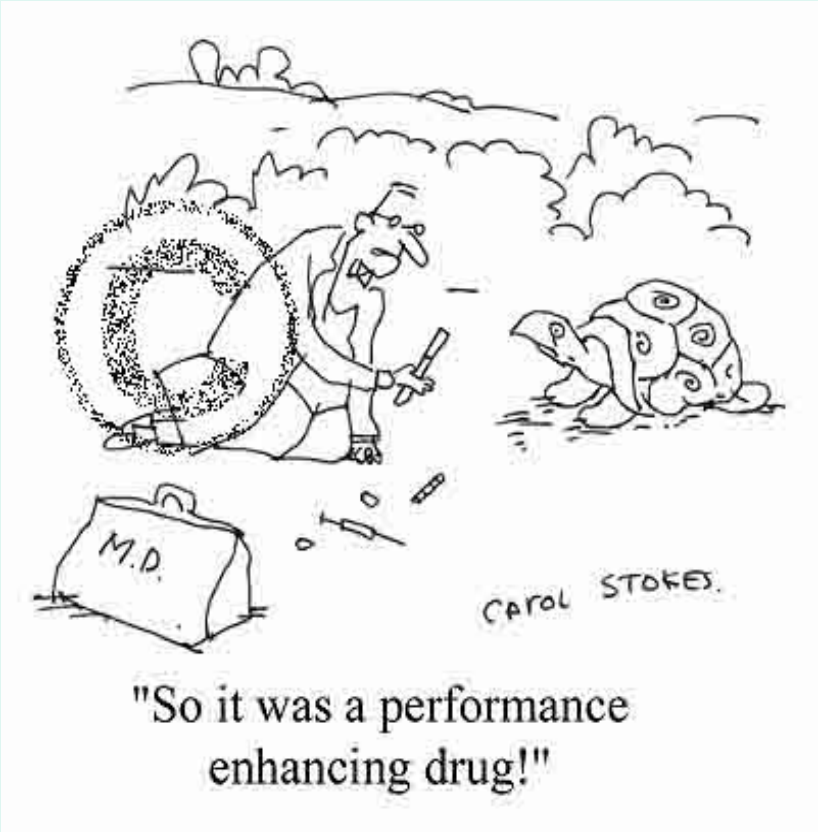
The mismatch

- For academia, technology development amounts to conceptualization and execution coupled with validation at the laboratory level.
- For industry, the interest lies in translating the laboratory validated concept into a commercial proposition, where the most important considerations are those of economic viability.
- The industrial R&D in the country should actually be focussed on this phase of technology development where laboratory models are scaled up and converted into commercially viable products/processes.
- The academic potential is best exploited in the first phase of technology development.

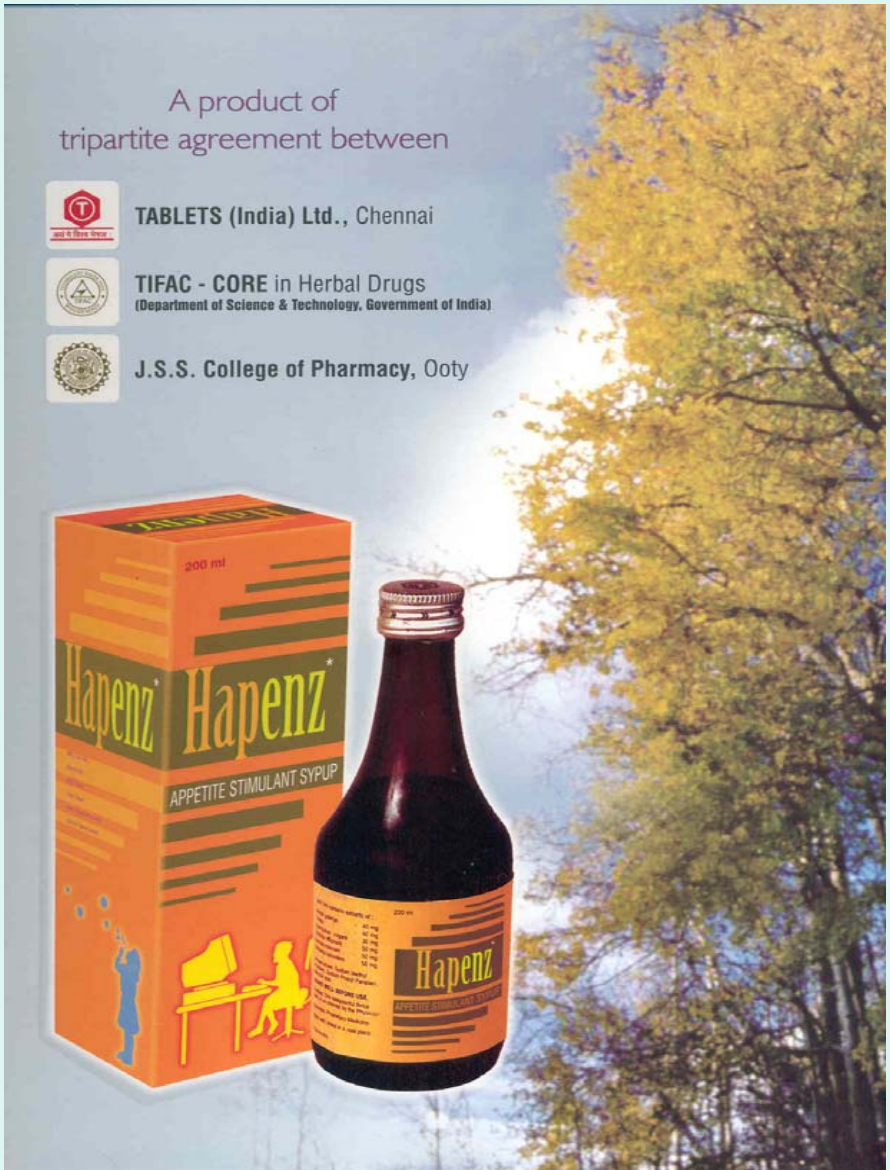
Avenues for Future

- With the CRO's coming up in the country in a big way, the academia faces a challenge to a closer interaction with industry**.**
- However, small and medium sectors, may need technological inputs from the academia in certain identified niche areas.
- Academia should be prepared to offer themselves by developing systems and procedures to ensure that industry expectations are met without any compromise on academic aspirations.
- Academia, jointly with industry, should initially conceive and take up short-term, small-budget, targeted exploration / development activity which, on the one hand, would instill confidence in industry and on the other, encourage it to embark on long-term research driven development.
- Such efforts at the individual level at select institutions have indeed yielded positive results.

Impact made by JSS college of Pharmacy, Ooty on pharmaceutical Industries



M/s. Tablets (India), Ltd., Chennai



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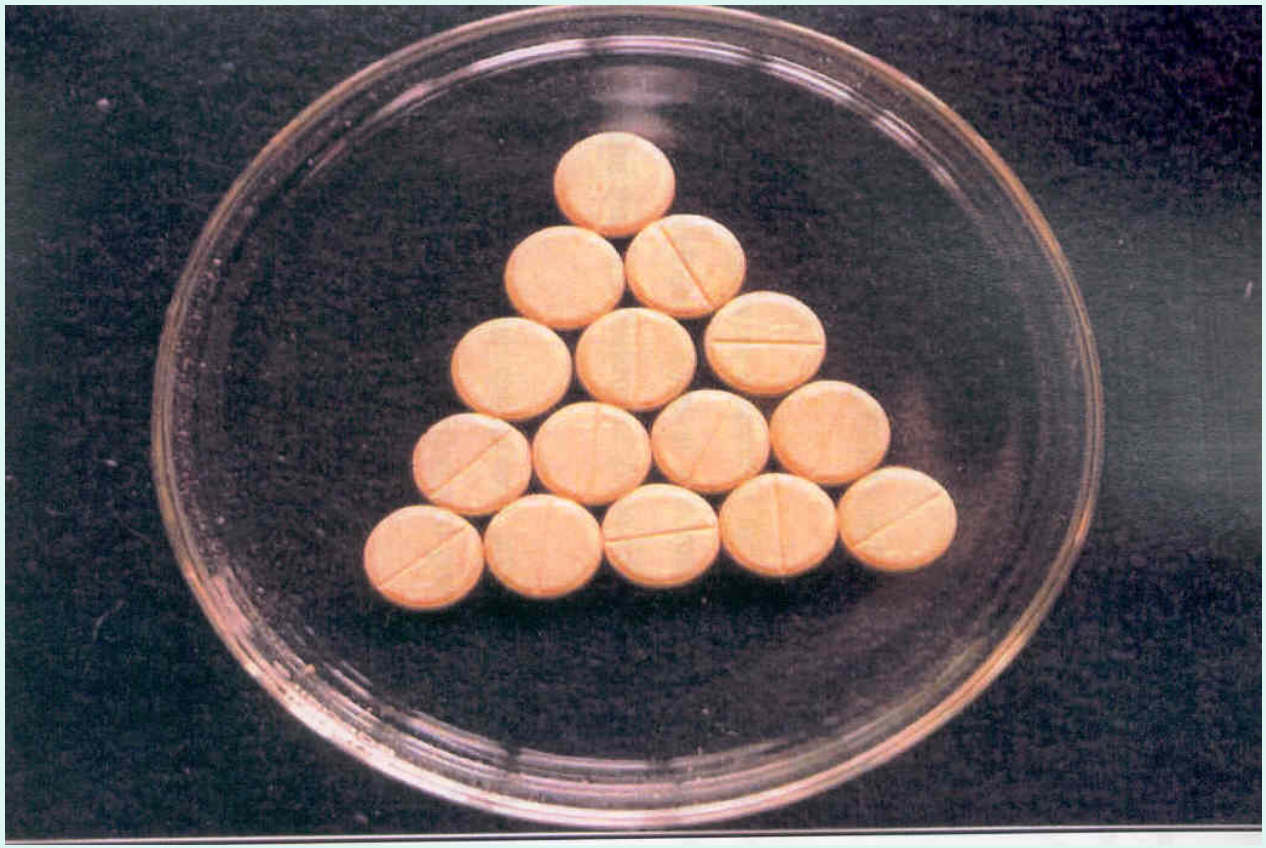

Natural Sleep formulation TNP-2

M/s. Arya Vaidya Sala, Kottakal

An MOU has been signed and the following studies on their ayurvedic formulations have been carried out. Some are in progress.

- Acute oral toxicity study of AF-1-04 in Wistar rats
- Acute oral toxicity study of AF-2-04 in Wistar rats
- Acute oral toxicity study of AF-3-04 in sprague dawley rats
- Acute oral toxicity study of AF-4-04 in sprague dawley rats
- 28-day oral toxicity study of AF-1-04 in male and female wistar rats
- 28-day oral toxicity study of AF-2-04 in male and female Wistar rats
- 28-day oral toxicity study of AF-3-04 in male and female sprague dawley rats
- 28-day oral toxicity study of AF-4-04 in male and female sprague dawley rats
- Evaluation of antipyretic potential of AF-1-04
- Evaluation of antipyretic potential of AF-2-04 series in rats

M/s. Vedic Life sciences, Mumbai

- An MOU has been signed and the following studies on their formulations have been carried out.

- 90 days oral toxicity study of ADKP in male and female SD rats.
- 90 days oral toxicity study of ADM01 in male and female SD rats
- Evaluation of anxiolytic and antidepressant activity of SBT/SR.
- Effect of SBT/SR in thiopentone induced sleep in mice.
- Evaluation of the effect of an essential oil on rat uterine contration (An *in vitro* Study)
- *In Vitro* anti inflammatory studies of an essential oil (EO)
- Evaluation of anorectic activity of NOPE, NOE and GTE in wistar rats.
- Erythrocyte micronucleus test in male and female SD rats for ADM01

M/s. Sami Labs, Bangalore

An MoU has been signed on the ”Development of certain controlled/sustained release formulations for newer drugs”. Controlled release formulations for the following drugs been carried out**:**

- Curcumin,
- Bosewellic acids
- Selino methionine
- Naproxen sodium
- Losartan potassium
- Cravedilol
- Aceclofenac

- Several plant extracts were screened for their antidiabetic activity.
- Several ocular toxicity studies were also carried out for certain NIDs.