Biomedical Prototype Development in Uruguay: 15 years and lessons learned

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Introduction: NIB develops a medical device if i) a clinical team is willing to use it and share specification, ii) it contains some originality, iii) financial resources and students are available. A 32 person-year effort is analyzed from perpectives of cost, technological availability for industry, teaching and clinical utility.

Method: NIB theses and purchases were reviewed; user satisfaction was updated.

Results: The Table shows 21 prototypes since 1987, 4K$ of mean cost of parts, 18 person-months and a value of 54K$ each (column K$-v, estimated with instrumentation and $20/person-hour). In three cases, additional equipment was build by former students. 13 equipment were used for over 5 years or are still in use.

Table 1 NIB Prototype Development

Project	M	K$-v	K$	Project	M	K$-v	K$	Project	M	K$-v	K$
MECVENT	25	11	3.0	**FARCAR**	19	61	7.3	**CLASICAR**	25	78	1.8
TACONATAL	5	15	0.4	**MONRES 94**	20	78	16.0	**MONICLI**	25	81	14.9
MONSE	8	19	5.6	**IMPEMAT**	19	62	0.7	**IMPETOM - I**	25	89	8.3
ADSE	4	6	1.9	**CALORNAT**	18	61	2.4	**ADQCAR**	33	113	0.5
VESTI	10	22	5.4	**VARFRE**	21	67	0.7	**IMPETOM -C**	25	80	0.7
AUTOVENT	12	26	3.9	**ESPECAR**	19	62	2.2	**CARDIDENT**	18	63	4.2
NUCLIMAGE	10	39	6.4	**SICTI**	19	66	6.0	**PESOPAC**	11	38	0.9

Discussion: Biomedical development is closely related to medical research and NIB has fared well by supporting it with original equipment. Sponsoring replication by independent start-up firms has largely failed. Uruguay still has to find the way to convey innovation into production. In 2002 the School of Economics was called to study NIB prototypes to produce business plans. ISO9001 inclusion in 2003 will strengthen the link with prospective firms.

Conclusions: Biomedical Industry in Latin America either attains excellence or disappears and it looks feasible as a small Country to concentrate on success stories (small capital share and large design effort) directed initially to MERCOSUR (Argentina, Brazil, Paraguay and Uruguay).

References: CONICYT: Uruguayan Science and Technology Council. Grant received 98/92.

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