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for a sustainable future

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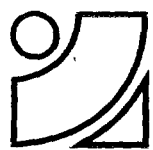
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BIO SERAE LABORATOIRES S.A.

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RAPPORT FINAL

ONUUDI

Projet N° US/INT/88/083

**Identification, préparation et promotion de projets industriels dans
les secteurs de l'agro-alimentaire pour les pays en voie de
développement.**

Contrat N° 97/177/JP

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S.A. au Capital de 2 209 300 F - R.C.S. B 329 581 375 ST-AFFRIQUE - Code APE 158 V - N° T.V.A. : FR 51 329 581 375
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A. EXECUTIVE SUMMARY :

An Indian company wished to obtain the technology of **high biological quality COLOSTRUM** production. This request, handled by ONUDI Paris, induced a relation between BIO SERAE S.A., who detains the technology and products **COLOSTRUM** from several animal species since 1986, and the petitioner **BHARAT S&V Ltd.**

A mission with multiple objectives (technical, economical, partner evaluation, pilot tests, etc) was undertaken and induced a collaborative phase of development (study of the resource, collect, processing). Meetings are arranged in February 98 to define collaborative agreements.

B. PARTNER IDENTIFICATION and PROJECT :

India presents a very important lack of **high biological quality COLOSTRUM** because of low activity and frequent pathologies of the product. The major indication for **COLOSTRUM** in India is gastro-intestinal diseases control, from viral and bacterial origin and their consequences (inflammation, mucous membrane restoring). A large population is concerned, superior to 300 millions considering purchasing power.

COLOSTRUM is appreciated as well for cultural reasons :

- ♣ Natural substance.
- ♣ Product from animal source admitted by vegetarian people eating milk and eggs.

The product will be introduced as a preparation with therapeutic objective, packaged as capsule, tablet or powder to be reconstituted.

In Europe and Industrial Countries, the market of **COLOSTRUM** is increasing for animal applications. A brake to its development is the price of the treatment.

Two solutions may be possible to extend the market :

- Reducing processing and raw material cost.
- Increasing biological activity of **COLOSTRUM**, offering highly immunized **COLOSTRUM**.

However the application of **COLOSTRUM** as a growth stimulant is the main source of market increase.

THE PROJECT :

✓ Objectives :

⊗ 2 markets to be provided :

- India,
- Europe and other industrial countries

⊗ 2 applications aimed :

- Veterinary zootechny
- Dietetics, human therapeutics

✓ Tasks :

Organizing production in India which has a considerable bovine and buffalo dairy cattle (India has the 2nd worldwide range in milk production) :

- Collect
- Processing into dry **COLOSTRUM** (packaged instantaneous powder)
- Production of second processing products in India for the local market (capsules, tablets, pastes, gel, etc)
- Creation of commercial activities :
 - in India
 - in Europe and industrial countries (for **COLOSTRUM** powder)

✓ Two essential qualitative conditions :

- Production of **high biological quality COLOSTRUM** conformable to established European criteria.
- Control of safety from the alive animals to ready-to-sale products.

✓ A regular condition :

- The export activity depends on agreement of import countries health authorities (EU, USA).
-

C. SPONSORSHIP :

BIO SERAE S.A. has the technology and commercial experience in dry **COLOSTRUM** (raw material) and second processing products (ready-to-use). In the partnership, **BIO SERAE S.A.** can provide :

- Technology for collecting, storing, control method for a quick qualitative selection.
- Process for obtaining instantaneous powder of **COLOSTRUM** with or without supplements.
- Engineering of production tool.
- Quality control methods.
- Radio-sterilization process.
- Processes for obtaining second processing products.
- Technical attendance.
- Export activity : Europ, USA, Canada (for **COLOSTRUM** powder).

BIO SERAE S.A. can also send an engineer in India to implement equipment, to start production and train production and quality control staff.

D. MARKET AND SALES FORECAST :

✓ INDIA :

- 30 g of **COLOSTRUM** powder for 1 treatment.
- Valorization of raw material :

3 FF/ treatment
100 FF/ kg

- Estimates (according to **BHARAT S&V Ltd**) :

	Year			
	1	2	3	4
Number of treatments/ year (millions)	1,5	4,5	9	12
Quantity of colostrum (tons)	45	135	270	360
Value (KF)	4500	13500	27000	36000

✓ **EXPORT SALES :**

- Price : 90 FF/ kg CIF Le Havre
- Estimates (according to **BHARAT S&V Ltd**) :

	Year			
	1	2	3	4
France (tons)	5	10	24	30
Europ (tons)	-	10	20	30
Other (tons)	-	-	3	10
Total (tons)	5	20	47	70
Value (KF)	450	1800	4230	6300

Notice : these are well advised estimates, based on identified activities in 1997, without considering the amplifying effect of very favorable offer, and without considering administrative decisions.

E. COMPARATIVE ANALYSIS OF THE PARTNER :

BIO SERAE S.A. didn't execute any partner search because the inversed procedure occurred, the partner being petitioner. Meanwhile **BIO SERAE S.A.** evaluated the ability of the partner to execute the project. Our observations are the following :

✓ **Dimension** :

BHARAT S&V Ltd employes 400 people in industrial and commercial activity.

✓ **Human resources** :

The company has scientific and technical staff, with high competences (doctors, specialized doctors, chemists, doctors of biological sciences) able to execute development, production, quality control.

The company has business structure in India for sales promotion of medicines at doctors and hospitals.

✓ **Industrial structure** :

The company has equipment for processing raw material and production of finished products in the fields of :

- Phytochemistry
 - Blood derived products
 - Serum
 - Vaccines
 - Diagnosis
-

✓ Collect of COLOSTRUM :

We have undertaken a valuation of the fresh COLOSTRUM collect capacity in good sanitary bovine and buffalo dairy breedings. It appears that **BHARAT S&V Ltd** is able to organize and manage the collect, with a sufficient volume of colostrum in the BOMBAY area.

F. STRATEGY PROPOSAL :

① April 97 – January 98 : Exploratory Phase

- Study of collect (quality, volume, sanitation)
- Pilot tests by **BHARAT S&V Ltd** according to **BIO SERAE S.A.** indications
- Qualitative evaluation of finished products by **BIO SERAE S.A.**
- Market tests by chemistry and commercial departments of **BHARAT S&V Ltd**
- Market research
- Investment evaluation

② February 98 – March 98 : Agreements

- Technology transfert agreements
- Business agreements

The contracts will be turned into a joint-venture after 2 years.

③ April 98 – December 98 : Project Execution

- Implementation
 - Start of production at autumn 98
-

ANNEXE 1

Le lait en Inde

Le lait en Inde

Le lait en Inde, sa production, sa transformation, sa consommation, mériteraient évidemment une meilleure connaissance du sujet et un long développement. Ce ne peut être ici qu'un rapide survol et quelques aperçus.

Le nom de l'Inde en hindi est Bharat. Nous sommes déjà dans le sujet ! Dans ce pays, la vache (Go) est sacrée. C'est vrai, depuis des millénaires pour les Hindous, également pour les bouddhistes, les Jains, soit 80 % environ de la population. C'est ainsi que dans le sud de l'Inde, Pongal est une fête traditionnelle en janvier, au cours de laquelle les vaches sont décorées, les cornes peintes et promenées

en cortège. Dans le sud, également, on y trouve plusieurs temples pour honorer la vache et dans la plupart des temples, on trouve Nandi, le taureau de Shiva, gardien de tous les mammifères. La vache est respectée, mais elle est un animal utilitaire, elle donne son lait, parcimonieusement il est vrai. Elle est parfois attelée comme le zébu ou le buffle (ou le dromadaire dans le Rajasthan) à la charrue, à la charrette.

Production record en 1997

Répartition de la production

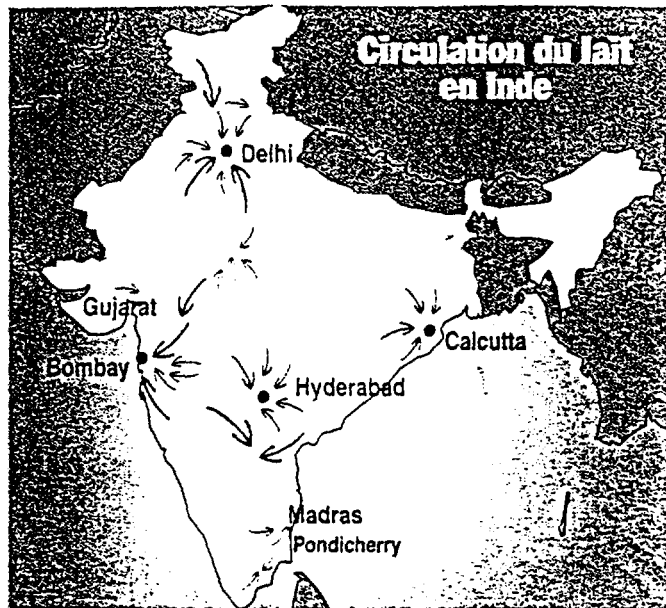
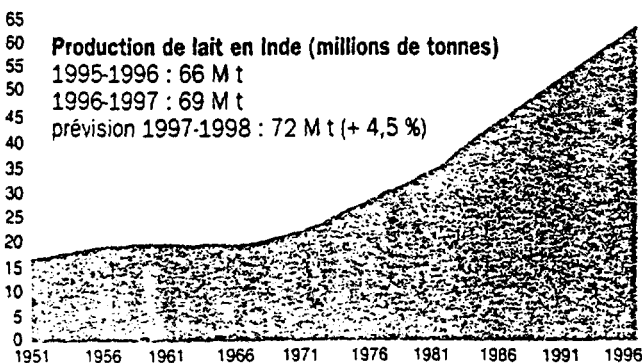
Lait liquide : 32 millions de tonnes (97 - 98)
Transformation : 38.5 millions de tonnes (96 - 97) 40 MT (97 - 98)
Consommation intérieure : 30.5 millions de tonnes (96 - 97)

Principaux produits laitiers

Lait en poudre 210 000 t (96 - 97) dont lait écrémé 105 000 t
beurre : 1.28 millions de tonnes (95)

1995	Exportations	Importations
Beurre/butter oil quota 2000 t	1000 t	6000 t
Lait écrémé en poudre quota 22000 t	10000 t	0

- L'Inde est le 2^e producteur mondial de lait derrière les USA et en passe de devenir le premier. Le lait de bufflesses, plus productives que les vaches indiennes, représente 52 % de la production.
- L'Inde est le 1^{er} producteur mondial de beurre/butter oil. La consommation moyenne de lait par habitant par jour est de 198 g inférieur au minimum recommandé, 283 g.
- Les exportations et les importations sont quasiment nulles.



Ce qui frappe le touriste occidental c'est de voir les vaches dans les villes, semblant errer dans le flux automobile à la recherche de quelques nourritures des plus diverses : décollant une affiche, broutant un journal à défaut d'autre chose. Mais le soir venu, ces vaches rentrent docilement à l'étable dans l'espoir d'un peu de foin, pour se faire traire. Ce lait servira aux besoins de la famille et l'excédent sera vendu dans le voisinage.

Le lait dans l'alimentation

Dans les campagnes, il en est évidemment tout autrement, les vaches sont la plupart du temps en enclos, très souvent entravées et nourries à partir de paille de riz ou autres végétaux, alimentation complétée parfois d'aliments composés. La vente du lait « en direct », telle qu'elle existait encore en France, il y a cinquante ans est très répandue en Inde : mais la création de très nombreuses laiteries coopératives près des lieux de consommation, dans les années 60/70 a permis d'améliorer les conditions de distribution, le lait étant très souvent conditionné en sachets plastique après standardisation et pasteurisation. C'est le plus souvent sous sa forme liquide que le lait sera consommé. Notamment dans le

thé. On trouve encore le lait sous forme de curd (caillé lactique de lait entier). Après ébullition et refroidissement à la température ambiante, le lait est ensemencé à partir du curd de la veille. Le curd pourra ainsi être préparé sous forme de boisson : battu avec de la glace et du sucre, pouvant être agrémenté de fruits (banane, mangue...), ce sera le lassi : salé, il pourra être servi pendant les repas.

Lors de la préparation des sweets, le lait est très souvent utilisé : on peut citer le kulfi, ice-cream coloré au safran et agrémenté de noix ; le faluda : mélange d'ice-cream, de lait et d'amande, parfumé à la rose ; le ras-kalam, etc.

Sous ces différentes formes, le lait constitue un apport protéique non négligeable dans une alimentation très souvent végétarienne.

Le beurre clarifié (ghi ou ghee, du sanscrit ghrita) est l'ancêtre indien de notre beurre concentré. Il est obtenu en faisant chauffer le beurre à 90-95 °C pendant quelques heures, ce qui a pour conséquence d'éliminer l'eau mais aussi de le stériliser. Le ghee est utilisé dans la cuisine et la pâtisserie mais sert aussi à alimenter le feu sacré dans les rites religieux quotidiens.

Le lait est vendu en 1997 aux

Un exemple d'atelier de transformation

L'exemple illustré ici correspond à un atelier artisanal transformant 4 à 500 litres de lait de vache par jour, en fromages à pâte demi-cuite. Cet atelier est situé dans la région de Pondichéry.

Cette unité de fabrication intègre la production de lait grâce à un troupeau de vaches : croisement jersiaise/race locale, amélioré par insémination (photo 1). Lorsque la production de lait est insuffisante, le complément est acheté auprès des fermes environnantes.

Le lait est réparti dans des récipients en acier inoxydable de 60 litres pour être pasteurisé à 67 °C au bain-marie, sur une batterie de réchauds à gaz (photo 2). Après refroidissement à 35 °C, par circulation d'eau froide, le lait estensemencé en ferments lactiques (curd) et emprésuré.

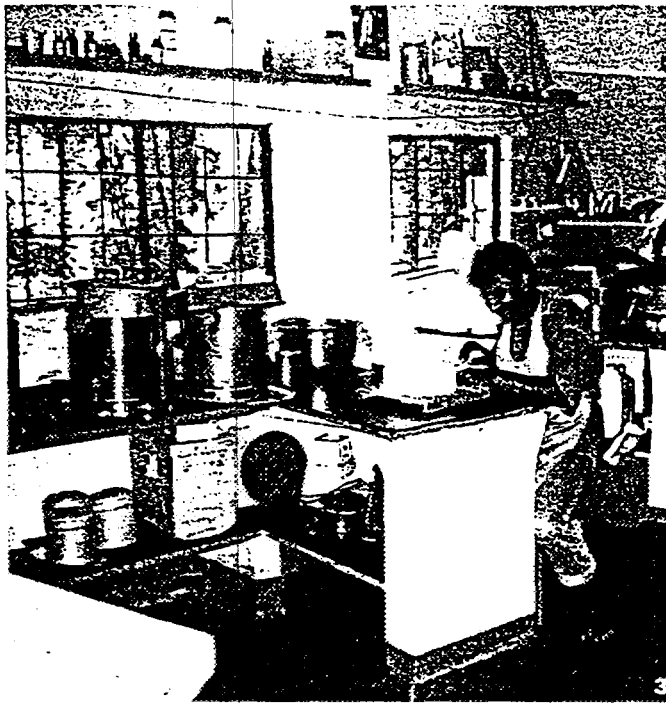
Suivent les opérations de décaillage, extraction d'une partie du lactosérum, lavage et moulage-pressé, en pain rond de 5 à 6 kg, correspondant à l'unité de fabrication de 60 litres (photo 3).

environ de 10 roupies le litre (soit 1.6 FF environ), ce qui est relativement important par rapport au salaire d'un ouvrier qui se situe actuellement aux environs de 3 à 400 roupies par semaine (55 à 60 FF). Si on veut essayer d'extrapoler sur la base d'un salaire hebdomadaire en France de 1 500 F, on aurait alors un prix du litre de lait entier aux environs de 40 F.

Transformation artisanale et industrielle du lait

Les utilisations du lait, dans les exemples précédents résultent d'une longue tradition alimentaire et sont pratiquées très souvent dans le cadre familial.

Les laiteries coopératives ont été mises en place il y a une trentaine d'années pour assurer un approvisionnement en lait dans les villes. Toutefois cer-



L'affinage se fait sur une durée de 5 à 6 semaines à température de 10-12 °C. Le fromage sera alors découpé et conditionné sous film plastique. Il est intéressant de noter qu'une grande partie du gaz utilisé pour les opérations de pasteurisation, de réchauffage,

taines usines ont commencé à transformer une partie de la collecte en poudre de lait écrémé ou gras, soit pour le marché indien, soit à l'exportation (notamment vers les pays du golfe persique avec lesquels l'Inde a des relations très suivies par l'intermédiaire des milliers de travailleurs qui s'y expatrient.

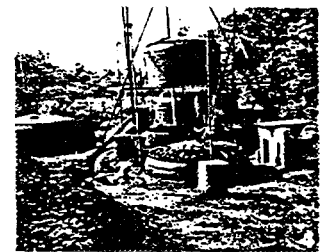
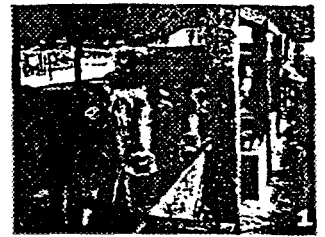
On trouve également sur le marché, du ghee fabriqué de façon industrielle, ainsi que du beurre pasteurisé, conditionné en plaquettes de 125 à 500 grammes. La fabrication indienne est concurrencée sur ce marché par des beurres d'origine australienne ou néo-zélandaise.

On peut noter également quelques usines qui commencent à produire de la caséine. L'industrie fromagère reste très confidentielle, la fabrication principale étant celle du pro-

vient d'une installation de bio-gaz attenante à l'étable (photo 4). Cette installation transforme la quasi-totalité des bouses de vache. Il est vrai que cette « culture écologique de la récupération » correspond bien aux habitudes de l'Inde où l'on voit encore très souvent

cess cheese. Toutefois, on commence à trouver une fabrication de fromages pour répondre à une demande exprimée par les Indiens disposant d'un pouvoir d'achat élevé et les étrangers occidentaux vivant en Inde. Depuis son indépendance en 1947 et sa partition dramatique avec le Pakistan et le Bangladesh, malgré ses difficultés politiques, économiques, l'Inde reste une grande nation démocratique avec ses différences étonnantes, ses langues multiples. Grâce à un effort agricole important, notamment par des irrigations, elle arrive à nourrir une population qui était de 430 millions en 1950 et sera de l'ordre du milliard en l'An 2000. Et les vaches « sacrées » contribuent depuis des millénaires à cette mission.

PIERRE SEGALIN



dans les campagnes, des galettes de bouses mélangées à des débris de paille, séchant au soleil pour servir de combustible ménager.

Quant au lactosérum, sous-produit du fromage, il est en partie utilisé comme boisson énergétique pour le troupeau laitier.

A lire

Dairy India 1997, 5^e édition. Pour tout savoir sur les besoins de l'industrie laitière en Inde et avoir un maximum d'informations techniques et économiques sur ce qui sera le plus gigantesque marché du XXI^e siècle, vous pouvez vous procurer Dairy India 1997, un recueil de 70 articles (900 pages), écrits par des spécialistes avec de

nombreux tableaux et graphiques statistiques. Ce document comporte également la liste de plus de 7 000 organisations. Commandes à : PR.Gupta, A-25 Priyadarshini Vihar, Delhi 110 092 - India. Tél/fax : (91-11) 224 30 39. Prix : 295 \$ US, majoré des frais de poste et de transport : 20 \$ US.

ANNEXE 2

Bharat Serums & Vaccines Ltd

BHARAT SERUMS & VACCINES LTD
IN
PURSUIT OF MEDICAL TECHNOLOGY



62 MITTAL CHAMBERS, NARIMAN POINT, MUMBAI - 400 021 INDIA
TEL: +91 22- 2866882/1 FAX: +91 22- 2866960

INTRODUCTION OF THE GROUP

COMPANY	YEAR ESTB.	NATURE OF BUSINESS
BHARAT SERUMS & VACCINES (P) LTD	1972	Mfg. & Marketing of Plasma Fractions
ADVY CHEMICAL	1988	Mfg. & Export of Human Proteins Ferroculture
SIRO TRADERS	1993	Gifts & Packing Materials
SPECIAL REFERENCE LAB.	1989	Specialized Pathology Lab
AKSIPRO DIAGNOSTICS (P) LTD.	1993	Plant Tissue Culture
AKSIGEN HOSPITAL CARE	1993	Pharmacia - UpJohn TPN, Oncology & Diagnostics & Others
I.E.I. (INDIA) (P) LTD.	1993	US Collaboration with International Enzymes Inc. for diagnostic products
CALICO DYEING & PRINTING MILLS LTD.	1941	Dyeing & Printing
CALICO INDUSTRIAL ENGINEERS LTD.	1947	Mfg. Textile Machinery
RAJ TRADERS	1969	Export of leather footwear
PAREKH BROTHERS	1967	Real Estate investments
A. G. DAFTARY ENGINEERS & CONTRACTORS	1956	Construction
ESSEN TELECOMMUNICATION (P) LTD.	1987	Mfg. EPABX Tel. Systems
HAYER STANDARD INDIA (P) LTD.	1989	Mfg. & Sales of Wiremesh
VOLTAMP TRAVELS	1985	Travel Agency

COMPANY PROFILE

BHARAT SERUMS & VACCINES PVT. LTD.,

AKSIGEN HOSPITAL CARE

ADVY CHEMICAL

OFFICE

52, MITTAL CHAMBERS,
NARIMAN POINT,
BOMBAY - 400 021, INDIA

TEL : +91-22-2886881, 234
FAX : +91-22-2022394

MANUFACTURING UNITS:

(1) ROAD NO.27,
WAGLE ESTATE,
THANE - 400 604, INDIA

TEL : +91-22-5322181/5321399
FAX: +91-22-5323640

(2) VERENA IND. ESTATE
GOA (2 UNITS)
[Under construction]

(2)

COMPANY INTRODUCTION

- BHARAT SERUMS & VACCINES PVT. LTD., IS THE PIONEER AND LEADER IN INDIA FOR MANUFACTURING PLASMA FRACTIONS AND DIAGNOSTICS.

- COMMENCED ITS OPERATIONS IN 1972.

- DR. V. G. DAFTARY, THE VISIONARY FOUNDER WAS AWARDED THE INDIAN GOVERNMENT'S IMPORT SUBSTITUTION AWARD TWICE FOR HAVING DEVELOPED INDIGENOUS TECHNOLOGY AND KNOWHOW FOR DIAGNOSTICS.

- PRIMARILY SET UP TO EXPORT PLASMA DERIVATIVES TO U.S., EUROPE AND JAPAN.

- TODAY, HOLDS AN 85% - 90% MARKET SHARE FOR HUMAN PLASMA DERIVATIVES WITH NEARLY 370 EMPLOYEES.

- RECENTLY ENTERED IN THE MANUFACTURE OF PHARMACEUTICAL FORMULATIONS & BULK ACTIVES.

- AKSIGEN HOSPITAL CARE, ESTABLISHED IN 1993, PRIMARILY TO IMPORT AND MARKET PHARMACIA-UPJOHN'S RANGE OF TOTAL PARENTERAL NUTRITION PRODUCTS, ONCOLOGY PRODUCTS AND ALLERGY DIAGNOSTIC SYSTEMS.

- ADVY CHEMICAL, ESTABLISHED IN 1988 TO MANUFACTURE PROTEINS & POLYCLONAL ANTIBODIES FOR ONLY EXPORTS, TO EUROPE, U.S. & JAPAN.

NAMES OF DIRECTORS AS ON APRIL 1996

NAME	AGE	PLACEMENT	FUNCTION
DR V G DAFTARY	72	CHAIRMAN	OVERALL
MR B V DAFTARY	40	MANAGING DIRECTOR	SALES, PURCHASE, EXPORT, IMPORT
DR G V DAFTARY	38	MANAGING DIRECTOR	PRODUCTION, R&D
MR M S VADYA	60	DIRECTOR	COMMERCIAL AFFAIRS
MR A G DAFTARY	69	HONORARY DIRECTOR	

NO. OF EMPLOYEES WITH ASSOCIATE CONCERNS

	PRESENT	PROPOSED 96/97
OFFICE STAFF	27	40
FACTORY STAFF	75	150
R & D STAFF	35	50
FIELD STAFF - PHARMA	175	240
- SPECIALITY	10	22
- CNS	20	33
- TRISTAR	20	33
- DIAGNOSTICS	8	20
T O T A L	370	588

BANKERS

STATE BANK OF INDIA, WAGLE INDUSTRIAL ESTATE BRANCH,
THANE - 400 604,
INDIA.

DISTRIBUTION ARRANGEMENTS OF ALL CONCERNS

PHARMACIA - UPJOHN, U.K.	PARENTAL NUTRITION PRODUCTS ONCOLOGY PRODUCTS ALLERGY DIAGNOSTICS
ORION DIAGNOSTICA, FINLAND	DIAGNOSTIC PRODUCTS
NOVAMED LTD., ISRAEL	DIAGNOSTIC PRODUCTS
KREATECH, NETHERLANDS	DIAGNOSTIC PRODUCTS
INTERNATIONAL ENZYMES INC., USA	DIAGNOSTIC PRODUCTS
BIOKIT, SPAIN	DIAGNOSTIC PRODUCTS
LANFAR, SPAIN	DIAGNOSTIC PRODUCTS
DIAMEDIX INTERNATIONAL, USA	DIAGNOSTIC PRODUCTS

A BRIEF COMPANY PROFILE

BHARAT SERUMS & VACCINES PVT. LTD.

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Maharashtra, INDIA

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Fax: -91 22 5323640

BHARAT SERUMS & VACCINES PVT.LTD

THE COMPANY - A BRIEF PROFILE

When determination and confidence are at work success follows, however desperate or bad the predicament one is in. Here is a typical example. Read on

A young Indian student, a bit out of the ordinary, pursuing his post-graduate studies in Pathology and Microbiology at Walter Reed Hospital, Washington, DC was destined to write a few glorious pages in the history of the Indian Pharmaceutical Industry. 1964 would have been just another year. But it proved to be a major milestone. The ideas and plans in the mind of this young doctor would not remain mere thoughts any longer. Having successfully completed his studies and obtaining his Post - graduate and Doctoral degrees, Diploma in Pathology and Microbiology he went into the applied field rather than settling down to the comforts of Laboratory practice or the security of a cushy job.

The time and place for this were very significant. It required a lot of courage and entrepreneurship to venture out into a field which was practically unheard of in his country.. Consider these odds facing a young and inexperienced entrepreneur:

Diagnostic manufacturing industry was almost nonexistent or rudimentary during those days.

Multinationals, who were practically monopolising the Pharmaceutical Industry in India appeared to have little or no interest in this branch due to probably its low investment - return ratio.

Diagnostics and devices were not locally available. Dependence on imported materials, the availability of which was very erratic was too frustrating for a man bursting with creative energy and enthusiasm. He took odds for encouragement and frustration for fuel.

Constraints were many. But Dr. V.G. Daftary was not to be put down easily. He loved challenges. He faced them head on. That was how his pet project, **BHARAT LABORATORIES** was born in 1964. He put everything into it, literally. It started as a one-man-show limited to the confines of his blood bank. But not for long. The beginning was made and there was no looking back. It was like burning the proverbial boat. Thus diagnostic manufacturing industry came to being in India.

From a very modest beginning with about five people and a turnover of approximately US \$ 10,000 the growth was phenomenal and awe inspiring to many.

Indiscriminate whole blood transfusion were a cause of concern to him. As is well known now, whole blood transfusion causes wastage of several unwanted components which is otherwise very useful to many. And blood was scarce and it still is. He could not remain a mere spectator. He wanted to do something about it. And that he did.

In 1972, he floated a new company for this purpose, **BHARAT SERUMS & VACCINES**. Yet another first. The concept of blood component therapy was introduced to this country. The medical profession could practice what they learned in medical schools about the selective use of blood components. Blood components and plasma derivatives were locally manufactured and sold in Indian market.

The accomplishments and contributions of this visionary doctor-turned entrepreneur did not remain unrecognised. Bharat Laboratories bagged two Import - Substitution awards for indigenously developing Anti-D blood grouping serum and Diagnostic strips for the detection of Glucose and Albumin in urine. BSV's R & D facility has been accorded recognition by the Dept. of Science and Technology, Govt. of India . University of Bombay has granted recognition to its Research & Development Laboratory as a centre for Postgraduate and Doctoral research in Microbiology, Applied Biology and Biochemistry.

This rapid advancement in the field of Diagnostics attracted international attention which resulted in **Bulk Exports** of these to developed countries like West Germany, Switzerland, USA, and Japan.

The Eighties saw the induction of some fresh blood into the organisation. Dr. Daftary's elder son Mr. Bharat Daftary joined him after completion of his studies and is currently looking after Finance and Marketing operations. Later, his younger son Dr. Gautam Daftary joined in after completion of his Medical Education and is heading the Manufacturing and Research activities. Together they proved to be a force to reckon with.

At present Bharat Serums & Vaccines Pvt. Ltd. as the flagship company along with its associate companies have a combined strength of more than 400 personnel with multi-locational activities involving development and or marketing of Diagnostics, Biologicals, Anti-Cancer drugs, Pharmaceutical formulations, Herbal Medicines, Herbal Cosmetics, Bulk Drugs, and Agricultural products. For the last three years the Company registered a steady growth rate of 70 to 80 per cent every year.

It is not surprising that several multi-and transnational companies have chosen Bharat Serums & Vaccines their partner in India for collaborative ventures.

Today, the foresight, vision and enterprise of Dr. Daftary has put India on the world map of Diagnostics, Immunologicals and Microbiological research on par with the giants in the Industry.

Today, India is emerging as a large bulk actives manufacturing base. Very few companies have ventured into this field. BSV has not only chalked out a definite plan to enter this field but has started implementing the same in phases.

A separate division has been established for this purpose. Adequately trained and experienced personnel have already been inducted. Field of activity chosen is the range of specialised drugs and intermediaries with high market demand and profitability. It is also envisaged to undertake basic research to identify and isolate new molecules.

Process standardisations at Laboratory and Pilot plant level have already been completed and are ready for commercial exploitation in three cases viz. Ondansetron, Fluconazole and Acyclovir. Laboratory level work has been successfully completed in the cases of Omeprazole and Lansoprazole. A separate team of Research Scientists are actively working on the Process standardisation of Propofol, Fluoxetine, Enalapril, Cisapride, and Melatonin.

Another group of drugs identified for the future programme spread over the next 2 to 3 years include Loratidine, Etodolac, Paroxetine, Ganciclovir, Sertraline and Salmeterol. Equipment and machinery required for scale - ups have been identified and ordered. Commercial level manufacturing has been planned on a time bound schedule.

The company has interest and long term plans in the following fields :

Diagnostics

Enzymes for therapeutic use

Isolation and Purification of Hormones

Pharmaceutical formulations (conventional and sustained release type)

Manufacture of Bulk Drugs for local consumption and export.

Floriculture

Pigments of plant origin

Plant and Animal Tissue culture

Polyclonal Antibodies

Herbal Medicines and Cosmetics

With the current activities and the all round expansion programme envisaged and being implemented, this company is expected to be among the top ten by the turn of the Century.

RESEARCH & DEVELOPMENT ACTIVITIES

PAST ACCOMPLISHMENTS

Received Import substitution Awards from the Govt. of India for indigenously developing Anti-D Blood typing serum and Diagnostic strips for detection of Glucose and Albumin in urine.

Manufactured for the first time in India, Blood Plasma and its derivatives Viz. Fibrinogen, Anti-Haemophilic Factor, Immunoglobulins, Specific immunoglobulins against Anti-D, Tetanus, Diphtheria, Pertussis, Measles, Pseudomonas, Rabies, Hepatitis B and Albumin using indigenous technology.

Pseudomonas immunoglobulin was manufactured for the first time in the World attracting a lot of International attention.

Received the M.L.Dahanukar award of the Maharashtra Chamber of Commerce for entrepreneurship in 1977.

PRESENT ACTIVITIES (1996)

Biostandardisation of herbal extracts and preparation of Formulations for treatment of Ulcers and Asthama.

Biostandardisation of herbal extracts for use in cosmetics

Diagnostic kits for Tuberculosis and other Infectious diseases

Isolation and purification of Human proteins of diagnostic significance.

Isolation and purification of Hormones for diagnostic and therapeutic use.

Development of new Formulations and dosage forms in specific fields of Medicine including Antineoplastic drugs.

Manufacture of Bulk drugs and development of new drugs for domestic market and for Export. Pilot plant level work has commenced on this range.

Preparation and commercialisation of Enzyme based therapeutic agents.

IN A NUTSHELL

BSV PL is the pioneer and leader in India in manufacturing Diagnostics and Plasma Fractions.

BL the Diagnostic division started in 1964

BSV commenced its activities in 1972

Dr. V.G. Daftary, the visionary founder was twice awarded the Govt. of India's Import Substitution awards and the M.L. Dahanukar award.

In eighties his sons Bharat and Dr. Gautam joined him.

Aksigen Hospital Care, another associate is in the manufacturing of herbal medicines and represents a number of companies in India including Kabi Pharmacia-Sweden, Pharmitalia, Pharmacia Diagnostics, Orion Diagnostica-Finland, Kreatech Netherlands and International Enzymes Inc. USA. etc.

Advy Chemical, primarily deals in manufacture and export of specialised proteins, herbal extracts used in the cosmetic industry, polyclonal antibodies and floriculture.

Special Reference Laboratory, undertakes specialised Clinical Laboratory tests.

Has increased its field of operations and functions as a multi - range multi-locational conglomerate.

A full fledged unit is being established in another State to accommodate the future expansion programme for formulations.