

**Nordic Network of Cyclodextrin Technology
Nordic Industrial Fund
Project no. 99051**

PROJECT REPORT

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PART 1. SUMMARY

During the years 1997-1998 Dr. Järvinen and Dr. Loftsson carried out a feasibility study (NIF project 97026) to evaluate the possibility of establishing a Nordic Network of Cyclodextrin Technology. The network was started at the beginning of 2000 containing three academic (University of Kuopio, University of Iceland, University of Oslo) and four industrial (Leiras Ltd., Santen Ltd. AstraZeneca Ltd. Cyclops Ltd.) partners. During the year 2000 Orion Pharma Ltd. also joined the network project as fifth industrial partner.

The objective of the Nordic Network of Cyclodextrin Technology was to increase collaboration between Nordic industrial and academic partners in the cyclodextrin research area. The network was working mainly by organizing workshops and symposiums in order to deliver the most recent cyclodextrin information for the industrial partners. In all 119 scientists from 19 Nordic pharmaceutical companies attend the workshops of the network during the years 2000 – 2002. In addition, Dr. Järvinen (University of Kuopio), Dr. Jarho (University of Kuopio) and Dr. Loftsson (University of Iceland) visited pharmaceutical companies, universities and symposiums to give lectures about the cyclodextrin technology. Together, 200 scientists from pharmaceutical companies and universities attended these lectures. Appendix 1 lists the workshops of the Nordic Network of Cyclodextrin Technology.

Besides of educational value feasibility studies were carried out in the universities to evaluate potential R&D ideas for the network and pharmaceutical companies. During years 2000 – 2002 thirteen feasibility studies were carried out in universities and most of them resulted in larger R&D projects. The collaboration with Leiras Ltd. describes well our strategy; the feasibility study was performed at the University of Kuopio and it resulted in a larger research project in Leiras Ltd. on year 2001. Also the feasibility study with Hormos-Nutraceutical Ltd. led to a larger research project and patent application on year 2002. In addition, the academic research project “development of sublingual cannabinoid formulation” led to a larger research project which is nowadays financed by Tekes (Finland). Besides of scientific value, this project led to two patent applications on year 2002. Appendix 2 lists all the feasibility studies of the Nordic Network of Cyclodextrin Technology during the years 2000 – 2002.

The main goal of the network was to increase collaboration between Nordic industrial and academic partners in the cyclodextrin research area. This goal was achieved very well and numerous meetings and discussions were carried out during the years 2000 – 2002 which are summarized in Appendix 3. The increase of knowledge in companies made possible for them to fully understand the potential of cyclodextrin-technology in drug development. The discussions with companies has already revealed the clear need to continue the project during the years 2003 – 2006. Numbers of new companies have already informed that they would like to participate in the network in the future. These companies include pharmaceutical, food-industry, agrochemicals and biotechnology companies.

PART 2. OBSERVATION OF THE RESULTS

We have answered by using the scale 1-5 for the arguments described in the form “Vädledning för rapportering” published by NIF.

Argument A) 5

Comment: During the year 2000 - 2002 network-project has increased substantially the Nordic co-operation between the academic and industrial partners. Thirteen feasibility studies have been performed at the universities which all resulted in larger research projects (Appendix 2). In addition, the cyclodextrin workshops were organized in Helsinki, Copenhagen and Stockholm, in order to increase the cyclodextrin co-operation with Nordic pharmaceutical companies. The workshops succeeded very well and most of the participants were from Nordic pharmaceutical companies (Appendix 1).

Argument B) 5

Comment: The activity of the network has strongly focused also to small and middle size companies during the years 2000 - 2002. Companies like Biotie Therapies Ltd., Focus Inhalation Ltd., Hormos-Medical Ltd., Colaplast Research, Maxygen ApS, Cheminova A/S, Active Biotech

Research AB, Amarin Development AB, Biovitrum Ltd. and Neuronova AB attended to the workshops in Helsinki, Copenhagen and Stockholm (Appendix 1). In addition, a feasibility studies with Hormos-Nutraceutical, Hormos-Medical and Juvantia Pharma Ltd. was performed at the University of Kuopio.

Argument C) 5

Comment: Nordic Network of Cyclodextrin Technology have improved clearly the status of Nordic countries as one of the leaders in cyclodextrin technology. Research and educational co-operation via network-project combined with strong international co-operation is a basis of this improvement. The clear indication is the 11th international cyclodextrin symposium which will be organized by professor Loftsson in Reykjavik on May 2002.

Argument D) 2

Comment: Co-operation (educational, scientific) in Nordic countries may also affect to international norms (e.g. regulatory aspects) dealing with the cyclodextrin containing pharmaceuticals. For example, first hydroxypropyl- β -cyclodextrin containing product was approved in the market in Iceland which was mainly due to work by professor Loftsson. Nowadays hydroxypropyl- β -cyclodextrin containing products are on the market in EU and USA.

Argument E) 5

Comment: The network create and deliver high quality information and expertise with the aim to improve competitiveness of Nordic pharmaceutical companies. During the year 2000 - 2002 thirteen feasibility studies were performed at the universities and several lectures was given in pharmaceutical companies (e.g. AstraZeneca Ltd., Orion Pharma Ltd. etc.) and in scientific meetings (e.g. workshops in Helsinki, Copenhagen and Stockholm).

PART 3. PUBLISHING POLICY

The results will be published in the scientific journals. However, if the results are patentable, the patent application will be filed before publishing. The typical research projects of the network are feasibility studies and larger R&D projects are started based on the results from the feasibility studies. The collaboration with Hormos-Nutraceutical Ltd. describes well the strategy; the feasibility study was performed at the University of Kuopio and it resulted in a larger research project and patent application on year 2002. Appendix 4 list the scientific- and patent publications of the network project from year 2002.

Besides of scientific publications during the year 2002 the operation of the Nordic Network of Cyclodextrin Technology was also introduced in "Tekniikan Näköalat" - the journal publish by Tekes (Finland). This publication (Pohjoismaisella verkottumisella tehokkaampia lääkkeitä) was made in co-operation with Markku Lehtinen (NIF) to introduce the operation of Nordic Industrial Fund in Finland and it contained an interview of Marja Ritala (Orion Pharma Ltd.) and Mikko Unkila (Hormos-Nutraceutical Ltd.) who told their good experiences from the present network.

PART 4 CONTACT INFORMATION

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