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News and Views

COST 48 EMBRACES ALGAL POLYSACCHARIDES

The European Cooperation in the Field of Scientific and Technical Research (COST) programmes are administered by the Commission of the European Communities. The aim is to promote collaboration between European scientists. The response to these initiatives has been mixed but COST 48 is proving to be particularly lively. This particular COST programme was proposed by Norway and covers the topic of marine primary biomass. There are three sub-groups dealing with cell culture and genetic improvement, phycocolloids† and fine chemicals, and bioconversion. About forty scientists attended a meeting in Trieste on 20–23 September 1987, to launch the sub-group on phycocolloids and fine chemicals. The meeting was ably hosted by Professor Sergio Paoletti from the University of Trieste and equally ably chaired by Professor Gerald Blunden from Portsmouth Polytechnic.

The 17 lectures presented covered a very wide field but the majority were concerned with some aspect of polysaccharide behaviour. One of the themes that emerged was the increasing use of polysaccharides to encapsulate biocatalysts, e.g. plant cells, yeasts etc. This process was discussed by Dr Skjaik-Breek from Trondheim and Dr Codd from Dundee and also mentioned by Dr Sandford in a lecture which dealt primarily with chitosan applications. The advantages of encapsulation are many and include protecting the encapsulated material against environmental stress and allowing it to function under more extreme conditions. The most frequently used process involves mixing the cell suspension with sodium alginate and extruding drops into a calcium chloride bath to give beads of sizes in the range 100 μm to 2 mm. The cells are trapped in an alginate gel but the large pore size of this gel, ~ 50 nm, allows most nutrients and metabolites to flow through the gel. An interesting variation on this process has been patented by Damon Biotech. This involves complexing the alginate on the surface of the bead with polylysine and then dissolving away the centre of the alginate bead

* For phycocolloid read algal polysaccharide.

with a calcium chelating agent. This results in the formation of a true capsule. It should be possible to use chitosan in the place of polylysine and indeed beads can be formed with chitosan alone.

A second theme that emerged from the meeting was the progress that has been made in the analysis of polysaccharides, particularly in the use of high resolution nmr. Dr Rochas showed how this could be used in agar characterisation and the group at Trondheim are employing it routinely for alginate block structure determination. Professor Paoletti discussed the analysis of contaminants in commercial polysaccharides and the development of a fluorescence method for determination of polyphenols. In alginates these are present at levels of around 0·5% along with similar levels of proteins. The presence of polyphenols has a number of disadvantages in some applications and ways of removing these were discussed.

The question of upgrading polysaccharides in other ways was also considered. For example the successful isolation of the epimerising alginate enzyme by the Trondheim group provides a means of increasing the guluronate block content and hence subsequent gel strength of alginate, whereas Dr Dea from Leatherhead described a highly sulphated agar which would melt at mouth temperature. Gelling concentrations were much higher than for normal agar but could be reduced by alkali modification. For some applications, e.g. carrageenan in air-freshener gels and ice cream stabilisation, and agar for pumpable jellies, partial degradation of the polysaccharide confers an advantage.

An interesting feature of the meeting was the discussion of an extremely wide range of applications for algal polysaccharides and related materials. Thus Dr Janson from Pharmacia discussed in some detail the range of separation processes based on agarose and Dr Skaugrud from Protan described the current and potential pharmaceutical applications for alginate. In quantity terms the most important appear to be in dental impression materials and in antirefluxants. In his two lectures Dr Sandford covered a vast range of applications for both chitosan and other polysaccharides and outlined where he thought the potential new markets would be. One possibility is as anticancer drugs and this was considered in a report on the animal testing of marine algae for antitumour activity by Dr de Waart from Zeist in The Netherlands. Another current application is in land reclamation and Dr Gordon from Portsmouth Polytechnic showed some impressive results where composted *Ascophyllum nodosum* is included in a spray which is used in the rapid establishment of plant growth on land where the vegetation and top soil has been removed as a result of construction projects.

We were also treated to film and multivision presentations dealing with Norwegian seaweed resources and the links between Professor Smidsrød's group in Trondheim and Protan.

The book of the meeting should be available early in 1988 from the Commission of Economic Communities in Brussels.

Working groups set-up

Money is available through the COST programme for the funding of visits, seminars and meetings. There is no money for research support. This means that COST might pay for a research student or member of staff to visit a laboratory in another member company for a couple of weeks, but would provide only travel and subsistence.

Working groups were set up which will cover the three areas:

(i) Phycocolloid gels for biotechnology.
(ii) Structure/functional relationships in phycocolloids.
(iii) Fine chemical proteins from marine algae.

It is intended that they will meet in the near future to compare results and set up joint programmes. Participating laboratories have been identified and at the moment (ii) seems the largest group with more than a dozen European institutions involved. This list, which was compiled from people attending the meeting, is by no means exclusive and if you would like to participate in the working groups then contact either:

Professor Sergio Paoletti,
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or

Professor Gerald Blunden,
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Industrial participation is welcomed.

Proposals for exchange visits will be considered at any time and further information about this and other aspects of COST48 can be obtained from the scientific secretary of the programme.

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Through its News and Views Section, *Carbohydrate Polymers* will update readers on this interesting new initiative.

J. R. Mitchell
P. A. Sandford

SUMMARIES OF UK PATENT APPLICATIONS

Aqueous Delayed-foaming Composition for Hair and Skin Treatment. GB 2188 060A. Filed 18 March 1987, published 23 September 1987. Applicants — L'Oreal, Paris.

The employment of a water soluble heterobiopolysaccharide particularly scanthan gum allows delayed foaming compositions to be prepared which preserve their properties during storage even after a first use.

Polymer-based Filler Compounds for Electrical Cables with Stranded Conductors. GB 2188 939A. Filed 3 April 1987, published 14 October 1987. Applicants — Società Cavi Pirelli S.p.A., Milan.

The filler in which the inwardly disposed strands of the conductor are imbedded will preferably contain a hygro-expansible particulate material such as a cellulose ester or ether.

Modified Human Tissue-type Plasminogen Activator and its Preparation. GB 2189 249A. Filed 17 March, published 21 October 1987. Applicants — Genentech Inc., California, USA.

Human tissue-type plasminogen activators are described with a modified or no carbohydrate structure at amino acid residue 117. Such

plasminogen activators have substantially the same activity and binding characteristics as native activators but have an increased *in vivo* half life.

NOTICES

1987

Biotechnology/Food Industry Exhibition and Conference
London, UK, 10–11 Dec. [*see* **7** (1) 86]

1988

Food Colloids — International Symposium
Sharnbrook, Bedford, UK, 13–15 April [*see* **7** (4) 324]

Tenth Cellulose Conference
Syracuse, NY USA, 29 May–1 June. [*see* **7** (3) 245]

4th International Conference on Chitin and Chitosan
Trondheim, Norway, 22–24 August. [*see* **7** (2) 167]

Biochemical Engineering VI
Santa Barbara, California, USA, 2–7 October. [*see* **7** (5) 405]

1989

Cellucon 89. Cellulose: Sources and Exploitation
UK, 11–15 September. [*see* **7** (3) 245]