

YSTER

Yster en staal is vir die mens sedert die oertyd 'n simbool van sterkte en standvastigheid, soos die uitdrukking 'n man van staal' getuig. So vind ons ook in die Bybel ver wysing na die eienskappe van yster: 'en soos yster fynstamp en vergruis, sal hy dit alles fynstamp en vergruis'—Dan. 2 : 40.

Ystersoute word deur geneeshere gebruik sedert die dae van Hippokrates, maar selfs vandag is die finale uitspraak daaroor nog nie gelewer nie. Ystertherapie het waarskynlik uit die mistieke towerkuns en geneeskunde van die outyd ontstaan met die hoop dat 'n deel van die krag van yster oorgedra sou word aan die swak en sieklike pasiënt. Sydenham het, teen ongeveer die tyd van die volksplanting aan die Kaap, yster vir die behandeling van 'chlorose van histerie' voorgestel. 'n Eeu later is yster in die as van bloed gevind en dit is vasgestel dat ysterbevattende voedsel die yster in die bloed laat styg. In 1832 het Pierre Blaud die spesifieke aksie van yster in die behandeling van chlorose bevestig en sy bekende, en ten regte, beroemde pille beskryf. Hierdie pille (0.3 g. ferrosulfaat en kaliumkarbonaat wat 0.1 g. ferrokarbonaat per pil beskikbaar stel) is vandag nog geregtig op 'n plek onder ons terapeutiese wapens. Sedert 1890 tot 1920 was yster tydelik in diskrediet weens dogmatiese stellings dat anorganiese yster sonder waarde in terapie is.<sup>1</sup> Die belangrikste rede was egter dat gevalle nie uitgesoek is nie en, soos vandag ook die geval is, is yster nie net spesifiek vir yster-tekortanemie toegedien nie, maar ook vir anemie as gevolg van ander oorsake. Die resultaat was natuurlik dat slegs die yster-tekortanemie gereageer het.<sup>1</sup>

In yster-tekortanemie sal yster, en yster alleen, die anemie herstel of ons nou die yster toedien met lewer per mond, bloedtransfusie of yster plus die so gewilde, maar so verdoemlike, breë spektrum hematiniese middels wat geen plek in die behandeling van anemie het nie.

Die effektiwiteit van yster is algemeen bekend in die behandeling van yster-tekortanemie (hipokroom, mikrosities). Die bivalente (Fe++) vorm is in die mens meer effektief as die trivalente (Fe+++ ) vorm, omdat yster in die bivalente vorm 1.5-15 maal beter absorbeer word as in die ander vorm. Honde, andersyds, toon egter nie hierdie verskil in absorpsie nie.

Ferrosulfaat of ferroglokonaat word toegedien en die gewone dosis is 3-6 tablette van 0.2 g. elk per dag. Blaud se pille moet in daaglikse hoeveelhede van 3-4 g. gegee word.

Daar is nie oortuigende bewys dat gemolibdeniseerde yster of verbindinge van kobalt-yster meer effektief is as ferrosulfaat alleen nie.<sup>2</sup> Die dosis moet na etes toegedien word om die voorkoms van prikkeling van die maag teen

te gaan. 'n Klein dosis ter aanvang, geleidelik vergroot, verminder die voorkoms van prikkeling van die maag en diaree. 'Yster-enkefalopatie' en ileus na massiewe dosisse is gerapporteer<sup>3,4</sup> maar is uiters seldsaam. In kinders wat per ongeluk groot hoeveelhede ingekry het, is ernstige toksiese simptome waargeneem wat in tot 50% gevalle noodlottig was.<sup>1</sup>

Die parenterale toediening van yster was hoofsaaklik weens toksiese nuwe-effekte lank onsuksesvol. Vandag is die probleem oorkom deur ystersaccharaat te gebruik vir binnespiers toediening en 'n dextran-ysteroplossing vir intraveneuse- en binnespiers toediening.<sup>1</sup> In hierdie gevalle is dit wenslik om die presiese dosis yster te bepaal met die formule:<sup>5</sup> Yster in gram benodig = (normale hemoglobien—aanvanlike hemoglobien) × 0.255.

Twintig jaar gelede het Davidson en Fullerton<sup>6</sup> duidelik getoon dat ferrosulfaat ewe effektief was as ander ysterpreparate destyds op die mark, maar teen 'n veel geringer koste.<sup>6</sup> In 'n onlangse artikel word die resultate van so 'n koste-vergelykende studie weereens gepubliseer.<sup>7</sup> In Skotland is gevind dat die koste 100 ferrosulfaat B.P.C. pille wat by 'n apteker gekoop is sonder 'n voorskrif, van 1/3 tot 7/4 gewissel het by 'n sekere handelsmerk van ferrosulfaatpille. Dit is gevind dat ferrosulfaat die goedkoopste ysterpreparaat is en dat dit net so effektief is as die duurder preparate. Ferrosulfaat behoort dus die eerste keuse te wees.

Davidson en Richmond<sup>7</sup> vind dat in die hospitaalpraktyk 46% van die ystervoorskrifte vir ferrosulfaat is en 54% vir die nuwer organiese ysterpreparate, terwyl in die algemene praktyk ferrosulfaat in 23% gevalle voorgeskryf is terwyl die duurder organiese preparate in 77% gevalle voorgeskryf is. Hulle bereken voorts dat as slegs ferrosulfaat voorgeskryf word, dit 'n besparing van £1,800 per jaar in die hospitaalpraktyk in Skotland sal beteken, terwyl £3,250 per maand in die algemene praktyk in Skotland op hierdie wyse bespaar kan word.

Klaarblyklik is daar die gevalle wat parenterale yster sal vereis en sekere ander verbindinge beter sal verdra, maar waar die duur van behandeling dikwels oor 'n geruime tydperk strek, is die koste tog 'n faktor wat ons aandag vereis, veral as 'n middel wat 5-6 maal duurder is, nie meer effektief is as die goedkoper een nie.

1. Wintrobe, M. M. (1956): *Clinical Hematology*, 4e Druk. Londen: Henry Kimpton.
2. Neary, E. R. (1946): *Amer. J. Med. Sci.*, 212, 76.
3. Hurst, A. F. (1931): *Guy's Hosp. Rep.*, 81, 243.
4. Sjöberg, H. (1935): *Acta med. scand.*, 85, 129.
5. Brown, E. B., Moore, W., Reynafarje, C. en Smith, D. E. (1950): *J. Amer. Med. Assoc.*, 144, 1084.
6. Davidson, L. S. P. en Fullerton, H. W. (1938): *Edinb. Med. J.*, 45, 193.
7. Davidson, Sir. S. en Richmond, J. (1958): *Lancet*, 2, 570.

INVESTIGATION OF HYPERSENSITIVITY

There are many approaches to the study of allergy. Some of these approaches involve the use of a single method or technique while others are based on a broad attack on the

problem. Many new methods of investigation have been evolved in recent years and some of these have been considered in a report from the Mayo Clinic.<sup>1</sup> Although they

are of a laboratory nature these developments are of considerable clinical interest to the physician in practice.

Three procedures have become well established in providing data of inestimable value. These are the use of the ultracentrifuge which has made the precise determination of the molecular weights of protein molecules possible, the quantitative precipitin test which permits calculation of the ratios in which antigen and antibody molecules combine; and the studies on hapten—azoproteins which have helped to clarify the nature of the chemical groups which confer antigenicity and combine with antibody.

Electrophoresis has led to great advances in serological investigations and many modifications of the original Tiselius method have been used to study electrophoretic fractions for antibody activity. Albumin has never been found to have any antibody activity which resides essentially in gamma and beta globulins.

The technique of the gel diffusion has proved very useful. Test-tube studies (with the difficulty in obtaining precipitin reactions) can now be substituted by diffusion of antigen and antibody towards each other in agar gel; this results in complexes which form an opaque line or lines as each antigenic component in a mixture diffuses at its own rate. The technique of gel diffusion has been used in the study of pollen and dust extracts, for example, with material obtained from rabbits sensitized to grass pollens. Antigens from insect stings have been compared in a similar way and extensive studies have been made with this test on fractions of human serum in normal and diseased states.

Among haemagglutination tests the Coombs test and its variations have made extensive studies of human antibodies possible. These antibodies have been found in post-

vaccinal encephalitis, blood dyscrasias, Guillain-Barré syndrome, glomerulonephritis, various collagen diseases and in several other conditions.

Using radioactive isotopes to tag antigen or antibody without significantly altering their immunological properties, globulins have been studied under various experimental conditions. Fluorescence has also been used as a method of tagging to demonstrate the localization of antigen and antibody in the tissues. The use of the technique of fluorescence has enabled certain workers to conclude that the plasma cell is a source of antibody. By other techniques involving cell transfer—isolating cells which have been exposed to antigen, injecting them into another animal of the same species, and demonstrating an increase in antibody titre—other workers have found the increase in antibody to be in proportion to the lymphocyte count. More work needs to be done to settle finally the question of whether plasma cells or lymphocytes are the site of antibody formation.

Many other procedures are available and newer ones will no doubt be forthcoming to supply the answers regarding the problems of antibodies and antibody formation. The studies on histamine are legion, and the action of 5-hydroxytryptamine and adrenocortical steroids are receiving much attention at present. The complicated problems of protein structure and synthesis, virology and genetics form the background for these investigations.

Clinicians should constantly keep themselves informed of the practical application of these intricate studies so that they may profit from the laboratory findings and suggest problems for further investigation.

1. Henderson, L. L. (1958): *Proc. Mayo Clin.*, 33, 459.

### AN UNPRECEDENTED CONTRIBUTION

The Southern Transvaal Branch of the Medical Association of South Africa recently made history by donating the unprecedented amount of £2,500 to the Benevolent Fund of the Association. By making this gesture this Branch has demonstrated to the whole of the medical profession what can be achieved by the enthusiasm and initiative of members. (A letter of appreciation from the Chairman of the Management Committee of the Benevolent Fund is published on page 44 of this issue.)

This contribution has a special significance in view of the fact that the financial position of the Association has, in recent months, been subjected to much criticism and scrutiny. It is not to be denied that the financial affairs of the Association have caused concern. Attempts made by the Association to procure greater support from its members, e.g. by means of special appeals, and the decision to increase the subscription, have, in some quarters, given rise to the criticism that the Medical Association is continually demanding more and more money from its members.

This inference is, to say the least, unjust. Like all public bodies the Medical Association has found that its expenses have increased considerably during recent years. It must, however, be remembered that the Association is not only continuing to render the usual services to its members, but that it has also greatly extended the range of its services. The services which are at present provided by the Association can be summarized as follows:

1. Opportunities for meeting colleagues, holding scientific meetings and providing a forum for the exchange of opinions.
2. A *Journal* for the spreading of medical knowledge.
3. Means for the settlement of ethical disputes between members.
4. Means for negotiating with medical aid societies and provision of some measure of control for medical benefit societies.
5. Means for negotiating with the Workmen's Compensation Commissioner.
6. Acting as the voice of the profession in all matters concerning medical practitioners, and being recognized as the official body in various Acts and Ordinances.
7. Legal protection for individual practitioners.
8. Procuring of income tax concessions of various kinds.
9. Obtaining preferential insurance of various forms for members.
10. Assistance to members by the Agency departments.
11. Amenities for members travelling overseas by reciprocity with the British Medical Association and the Canadian Medical Association, and through membership of the World Medical Association.
12. Improvement of salary scales of full-time personnel.
13. Influence on medical schools and medical education generally, e.g. the establishment of the College of Physicians, Surgeons and Gynaecologists of South Africa.

14. Postgraduate courses, provided directly or through medical schools.

15. Library facilities through grants to medical school libraries.

16. Assistance to needy dependants of members, through the Benevolent Fund.

17. Acting as a unifying factor, through Branches and Divisions, among practitioners.

18. Liaison with other professional bodies and the public. Wholehearted support from all its members will make it possible for the Medical Association of South Africa to become a professional organization founded on unimpeachable ethical standards and imbued with the ideal not only to safeguard the financial status of its members, but also to give cultural guidance in matters of academic and professional policy and principles.