

Seaweed and alginates — 2,400 years from first use to drug tariff

REFERENCES

- Blaine G (1946) The use of plastics in surgery. *Lancet* ccli(2): 525–8
- Cowan T (ed) (2013) *Wound Care Handbook 2013–14 (6th edn)*. Mark Allen Healthcare, London
- Gilchrist T, Martin AM (1983) Wound treatment with Sorbsan — an alginate fibre dressing. *Biomaterials* 4:317–20
- Heenan A (1998) *Frequently Asked Questions: Alginate Dressings*. Available at www.worldwidewounds.com/1998/june/Alginates-FAQ/alginate-questions.html. (accessed on 26.09.15)
- Morgan D (1997) Alginate dressings. part 1: historical aspects. *J Tissue Viabil* 7(1):4–9
- Morris ZS, Wooding S, Grant J (2011) The answer is 17 years, what is the question: understanding time lags in translational research. *J Royal Soc Med* 104:510–20
- Selvaggi G, Monstrey S, Van Landuyt K et al (2003) The role of iodine in antisepsis and wound management: a reappraisal. *Acta Chirurgica Belgica* 103(3):241–7
- Stanford ECC (1883) On algin: a new substance obtained from some of the commoner species of marine algae. *Chemistry News* 47:254–7
- Thomas S (2000) Alginate dressings in surgery and wound management—Part 1. *J Wound Care* 9(2):56–60
- Winter G (1962) Formation of the Scab and the Rate of epithelisation of superficial wounds in the skin of the young domestic pig. *Nature* 193: 293–4

The use of alginates in wound care is now commonplace, and a brief perusal of the current *Wound Care Handbook* reveals some 45 alginate products indicated for moderate- to heavily-exuding wounds, such as leg ulcers, pressure ulcers, and surgical wounds (Thomas, 2000).

It has been a theme of the From the Archives series that many ostensibly arcane treatments from ancient times still have relevance to the modern wound care practitioner, and the use of alginates is yet another example. Calcium and sodium alginates derived from seaweed (Heenan, 1998) only really came to the fore as a refined dressing component in the 1980s after the introduction of hydrocolloids, films, foams and hydrogels (Thomas, 2000). Today, alginates have arguably become the go-to dressing for cavities and highly exuding wounds, providing clinicians with a non-adherent, fast- or slow-gelling dressing capable of minimising dead space and absorbing 15–20 times their own weight in fluid (Cowan, 2013). However, they are not so recent a phenomenon as one may think. According to Selvaggi (2003), Aristotle's pupil and 'first expert in medical plants' Theophrastus described the use of seaweed in the treatment of sunburn wounds in the 4th century BC, using it to relieve pain.

The discovery of alginic acid and the realisation of its possible benefits did not occur until some two millennia later, when Scottish chemist ECC Stanford discovered and patented an extraction process of what he termed 'algin' (which we now know as alginic acid) from washed-up seaweed, before publishing his findings in 1883 (Stanford, 1883; Morgan, 1997).

World War Two medic Major George Blaine was the first clinician to investigate the interaction of wound tissue with alginates, and to realise their potential as absorbers of exudate. He used them on burn wounds in the Far East (Blaine, 1946) and carried out clinical studies when the war was over. It can be assumed that, despite his findings, the merits of a moist wound



Seaweed was first used to treat sunburn wounds in the 4th century BC and now plays a major part in modern wound care as a component of alginate dressings.

healing environment went under-appreciated until Winter's seminal work in the early 1960s.

Although early iterations of alginate dressings had good results and were used on surgical wounds in 70 hospitals, the high production costs were prohibitive and production was stopped in the 1970s. (Thomas, 2000). In more recent times, Sorbsan ushered in the new generation of alginate dressings with clinical reports on their performance published in 1983 (Gilchrist, 1983), shortly followed by the launch of Kaltostat in 1986. The official seal of approval was given in 1988, when Sorbsan was added to the drug tariff (Thomas, 2000).

It has been astutely observed that the average time for research evidence to translate into clinical practice is 17 years (Morris et al, 2011). Theophrastus and Major Blaine both used seaweed-based dressings for the treatment of burn wounds, but they were 2,400 years apart. The interval between Blaine's published evidence and the acceptance of alginates into the drug tariff was 42 years. Is it any wonder that gauze continues to see widespread use? **WUK**

EDWARD WHITE
Freelance Medical Writer,
British Columbia, Canada