REVIEW ARTICLES

The gripe water story

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Every general practitioner would attest to the frequency with which mothers in Britain use gripe water. Information about gripe water sales is difficult to obtain, as it is commercially sensitive. That its use is widespread is evident from a survey of 200 mothers in Sheffield. 64% (128) gave their babies gripe water by the first month[1]. In the USA, where it is regarded as a drug, gripe water was banned in 1982. Despite the ban a paediatrician wrote in the *New York Times* that every month he received a request for gripe water[2]. It is marketed in most countries of the world and advertised on the Internet yet very little has been written about it. A Medline search yielded only two references[1,3].

WILLIAM WOODWARD (1828–1912)

William Woodward born and educated in Stamford, formulated gripe water in 1851[4]. He had been apprentice to the pharmacist John Halliday Thomas in Boston, who gave him a thorough grounding in the business and practice of pharmacy. After serving seven years' apprenticeship he moved to London, where he spent a year. In 1851 he purchased a pharmacy in Nottingham. Woodward was a person whose manner and appearance inspired confidence. He had a wide reputation as a successful provider of remedies for simple ailments. One of his earliest successes was gripe water, which he sold to the public by the ounce and to doctors and hospitals by the gallon.

In the 1840s babies in the fens were afflicted by a condition known as 'fen fever' (the fens are an area of reclaimed marshland in eastern England, between Lincoln in the north and Cambridge in the south). At that time the still water of the marshland was a breeding ground for malaria-carrying mosquitoes. The size of the malaria problem is illustrated by the fact that, in the decade 1850–1860, as many as 5% of patients at St Thomas' Hospital, London, were suffering from malaria (then called ague)[5]. Woodward took his inspiration for the gripe water formula from a recipe that a group of Nottingham doctors were using to treat fen fever. The doctors noted that the benefit was not limited to the treatment of malaria. The formula was also an effective soother of fretful babies and provided relief from gastrointestinal troubles in infants. It is the latter that gave rise to the name. Why Woodward chose the name gripe water is not clear. Probably he was influenced by the 19th century name for gastroenteritis, watery gripes[3].

Figure 1 **Infant Hercules strangling two serpents**

In 1876 he registered 'gripe water' as a trade mark[4]. The *Infant Hercules*, painted by Sir Joshua Reynolds, was registered as the marque and is still used today (Figure 1). The picture depicts the mythical Hercules in his cradle, strangling two serpents which Juno has sent to destroy him. In 1877 when he retired, Woodward sold the gripe water business to a friend only to buy it back five years later.

WILLIAM HARRISON WOODWARD

In 1903 a limited company was formed with William Woodward as the permanent governing director, with power to appoint his son in his stead. On his father's death in 1912 William Harrison Woodward took over the business. He was a classical scholar and in the previous decade William junior had devoted more time to his literary pursuits than to the running of the business. However, under his stewardship sales of gripe water went from strength to strength. Its popularity owed as much to personal recommendation as to advertising. It sold well in China, where it was not advertised. There sales resulted from the recommendation of the wives of European and American diplomats. Wives of British servicemen eventually spread the virtues of gripe water to the far corners of the British Empire.

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It is apparent from advertisements that the marketing strategy of the company was to foster a strong belief in the product and to appeal to a sense of patriotism[4]. Endorsements of contented users were prominently displayed. A common slogan at the time was 'Granny told mother and mother told me'. The sense of patriotism was exploited by featuring gripe water in advertisements next to battleships or cavalry. In one advertisement showing battleships as protectors of our shores, gripe water is portrayed as 'protector of our children'.

In 1926 Sanitas Trust Limited acquired the company, gripe water being the sole product at that time. It is now owned by Seton Scholl London International and gripe water is manufactured under licence in many countries around the globe. Woodward's original formulation has spawned several imitations, none of which has proven so popular. The composition of Woodward's gripe water now varies according to the country of manufacture. In Britain, following public pressure, alcohol was removed in 1992 and a non-cariogenic sweetener, Lycasin, has replaced sucrose. Other active ingredients are dill seed oil and bicarbonate. Gripe water is a very popular remedy for colic, yet surprisingly colic is not specifically identified as an indication. The label recommends it for flatulence, teething and 'minor tummy upsets'.

INFANTILE COLIC

Infantile colic is confined to the first 4–5 months of life. Starting in the first weeks there is excessive crying which typically is worst in the evenings. It is more common in breast-fed than in bottle-fed infants[6]. Although there is no universally agreed definition of colic most researchers use the Wessel criteria or a modification. Colic is defined as crying for at least 3 hours a day on 3 days a week for 3 weeks[7].

The cause of colic is unknown but there seem to be three main theories. First, the excessive crying is the extreme end of the normal variation[8]. The fact that acoustically the colic cry is indistinguishable from other cries such as hunger would support this view[9]. Second, the excessive crying is primarily a behavioural problem. Important factors in this theory are the child's temperament and the interaction between child and parent[10]. The frequency with which children with colic go on to develop other behaviour problems supports this view. The third theory presupposes an organic cause for excessively painful bowel contractions. Factors proposed in support have been cow's milk allergy, lactose intolerance and excessive gas[11].

Uncertainty about the causation has spawned numerous unconventional therapies, ranging from herbal teas to car-ride simulators[12,13]. Many of these have been evaluated. Some, such as avoidance of cow's milk and parental counselling, may help on occasions[10,11]. The only drug which has been shown to help is an anticholinergic, dicyclomine; however, its use is restricted because of side-effects[11].

GRIPE WATER AND COLIC

Despite much anecdotal evidence extolling the benefit of gripe water for colic, no formal evaluation has ever been undertaken. Until recently it had been assumed that alcohol provided the soothing effect[14]. For a 4 kg infant, the maximum recommended dose of Woodward's gripe water (3.6% alcohol) would be the equivalent of almost five tots of whisky in an 80 kg adult[1]. In some of the other commercial gripe waters the alcohol has been as high as 9%. Not surprisingly, there are reports of adults becoming addicted to gripe water[15]. In the only study comparing an alcohol solution (20%) with placebo, alcohol was no more effective in relieving colic[16].

The neutralizing effect of bicarbonate in the formula probably provides little relief from discomfort since hyperacidity is not considered to be the cause. Dill is a Norwegian word meaning to lull, the latter referring to the plant's carminative properties. In one of the earliest descriptions of colic Illingworth commented on the unduly loud borborygmi and the relief of pain by the passage of flatus[17]. If the presence of excess gas causes pain then the carminative effect of dill may be soothing.

It now seems that the soothing effect of gripe water derives from its sweet taste. Recent studies have shown that infants with colic obtain relief from sugar solutions[18,19]. The fact that the analgesic effect of a sugar solution is lost when it is fed by tube[20] indicates that the effect, which persists after the sugar is swallowed, is mediated through taste. Evidence from animals and humans implicates a central opioid dependent anodyne system[19]. Artificial sweeteners such as aspartame are just as effective as sucrose[21]. After almost 150 years there is now a rational basis for use of gripe water in infants with colic. The realization that sugar is an anodyne is not new. It dates back to biblical times. Both Jews and Muslims employ sweeteners as a prelude to circumcision. In Judaism the mohel (circumciser) dips his finger in sweet red wine before placing it in the infant's mouth. Muslims rub pieces of chewed dates inside the cheek.

In conclusion, it is serendipitous that a treatment Woodward designed for malaria is today a very popular treatment for colic with an enormous commercial value. The benefit derives from its sweet taste. There is now no justification for including alcohol or cariogenic sugars in gripe water. Paediatricians in those countries where alcohol and sucrose are included in the formulation should lobby for their removal.

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