

CASE REPORT

## The Effect of a Lipid Extract of the New Zealand Green-Lipped Mussel in Three Cases of Arthritis

SHEILA L.M. GIBSON., M.D., B.Sc., M.F.Hom.

### INTRODUCTION

Extracts of the New Zealand green-lipped mussel, *Perna canaliculus*, have been used since the 1970s for the treatment of both rheumatoid arthritis and osteoarthritis. A pilot study suggested that this mussel could be helpful, and a double-blind placebo-controlled trial found the mollusk to be effective for 68% of patients with rheumatoid arthritis and for 40% of those with osteoarthritis (Gibson, et al., 1980). Not all researchers, however, obtained similar beneficial results (Caughey, et al., 1983; Huskisson, et al., 1981; Larkin, et al., 1985), and it was discovered in the early 1980s that stabilization of the product was necessary to maintain biologic activity. More recently, a lipid extract has been developed and has proved to be indistinguishable in its activity from the stabilized freeze-dried mussel powder from which it was prepared, demonstrating that the biologic activity of this preparation is in the lipid fraction rather than in the protein moiety (Gibson and Gibson, 1998).

In the comparative study of the lipid fraction versus the stabilized mussel powder (Gibson and Gibson, 1998), statistically significant improvements were observed in patients with both rheumatoid arthritis and osteoarthritis within 1 month of starting treatment, but there was no obvious overall difference between the two preparations. Seventy-five percent of patients with both rheumatoid arthritis and os-

teoarthritis benefitted. Although the number of patients in the trial was small (60 in total; 30 with rheumatoid arthritis and 30 with osteoarthritis), some patients, particularly those with rheumatoid arthritis, seemed to respond remarkably quickly to the lipid extract as illustrated by the following three case studies. These three patients were all in the rheumatoid group, which received the lipid extract. The progress of all three patients was monitored by means of the articular index (AI) of joint pain (Ritchie, et al., 1968), limbering up time (LUT) or morning stiffness, grip strength in each hand (Lee, et al., 1974), pain as assessed by the visual analogue (VA) scale (Huskisson, 1974; Scott and Huskisson, 1976) and the functional index (FI) (Lee, et al., 1973), which are the answers to a series of 22 questions that assess each patient's ability to turn the head, bend, use the hands and arms, and walk and climb up and down stairs. The values obtained for these parameters for the three patients at the first consultation and after 3 months, are given in Table 1.

### CASE 1

The patient is a male, age 48, who was seropositive for rheumatoid arthritis, fulfilling the diagnostic criteria for classical rheumatoid arthritis (Ropes, et al., 1959).

This man owned a garden maintenance and

landscaping business and had developed severe, rapidly progressive seropositive rheumatoid arthritis 14 months prior to being seen at the Outpatient Department of the Glasgow Homoeopathic Hospital, Glasgow, Scotland. He was diagnosed by a consultant rheumatologist and referred by his general practitioner. He had pain, stiffness, and weakness of his hands and wrists, had difficulty in walking, and was seriously considering giving up his landscaping business and associated garden center as he could no longer manage the work or drive his trucks. Understandably, he was depressed. He was taking naproxen and aspirin with little benefit.

He received a prescription for the lipid extract, 3 capsules per day, and was due to be seen again 1 month later, but did not appear. When contacted, he apologized for forgetting his appointment. He was so well that he had been busy laying a driveway for a local estate—in driving snow. He had had an aggravation of his symptoms on the third day of taking the extract and then the pain and swelling had subsided, his strength improved, and he felt really well. He was able to do all the heavy jobs associated with his business, and driving heavy trucks was no problem. His AI improved from 13 to 1; his LUT went from 60 minutes to no stiffness; his grip strengths in right and left hands went from 180 to 300 mm of mercury and from 90 to 250 mm of mercury respectively; his VA scale of pain went from 9 to 1; and his FI went from 15 to 1. (See Table 1).

Three years later he continues to do well on 1–2 capsules of the extract per day. His problems, however, can flare up in his wrists and hands if he works a 5-hour stint hammering in fence posts and nails. He acknowledges that he must learn to delegate certain jobs more often.

## CASE 2

This patient is a female, age 41; who was initially diagnosed as having seropositive rheumatoid arthritis by a consultant rheumatologist at the Dumfries Royal Infirmary, Dumfries, Scotland, and later as having Sjögren's syndrome when she developed keratoconjunctivitis sicca and xerostomia with a markedly abnormal Schirmer's test, positive ANF and anti-La titers, and weakly positive anti-Ro and moderately positive anti-DNA antibodies.

This patient had begun to feel unwell approximately 1 year prior to being seen at the outpatient department of the outpatient department of the Glasgow Homoeopathic Hospital. She developed increasing stiffness and felt that she was aging rapidly. She had increasing dryness of the mouth and the eyes and had severe fatigue. She had pronounced weakness of the arms and hands and had difficulty in bending and in climbing stairs. Prior to the illness, she had been very active and owned a horse, which she had been unable to ride for several months. She was stiff all day and never managed to limber up. She was on synthetic saliva

TABLE 1. THE CHANGES IN ARTICULAR INDEX, LIMBERING UP TIME, GRIP STRENGTH, AND THE VISUAL ANALOGUE ASSESSMENT OF PAIN AND FUNCTIONAL INDEX IN THE THREE PATIENTS FROM BASELINE TO 3 MONTHS

Case no.	AI	LUT	Grip strength		VA	FI
			Right	Left		
		Minutes	mm mercury			
1						
Baseline	13	60	180	90	9	15
3 months	1	0	300+	250	1	1
2						
Baseline	2	all day	130	120	7	15
3 months	0	0	300+	300	3	1
3						
Baseline	30	5	30	60	6	24
3 months	0	1	200	220	0	0

AI, articular index; LUT, limbering up time; VA, visual analogue assessment of pain; FI, functional index.

and artificial tears as well as taking ibuprofen, which made her feel even more unwell.

Two weeks after starting the lipid extract (3 capsules per day) she was very much better. She had no stiffness and no pain, and her strength had returned, as had her tears and saliva. She had much more energy and had started to ride her horse again. One week later, she was riding with ease. She felt rejuvenated and no longer worried about aging. Her AI improved from 2 to 0; her LUT went from being stiff all day to having no stiffness; her grip strengths in right and left hands went from 130 to 300 mm of mercury and from 120 to 300 mm of mercury respectively; her VA pain scale went from 7 to 3; and her FI went from 15 to 1. (See Table 1).

She has continued to do well and has no problems with her joints, eyes, or saliva as long as she continues to take the lipid extract. Should she run out of it, the stiffness and lack of tears and saliva begin to return but are reversed rapidly when she recommences taking the extract. She no longer needs any nonsteroidal anti-inflammatory drugs (NSAIDs) or artificial tears or saliva.

### CASE 3

This patient is a female, age 11 who has juvenile rheumatoid arthritis.

This little girl was in a wheelchair when she was first seen. The problem had begun suddenly 1 year previously, to being seen shortly after her tenth birthday, with swelling of the right foot, which was thought to be a sprain. The swelling subsided within 2 weeks, and 2 months later her right hand became swollen and painful, especially the thumb. This also subsided, and then, approximately 2 months later, both her right foot and ankle and her right hand and wrist became swollen and painful. She was put on naproxen by her general practitioner and was reasonably well controlled for 5–6 months, after which time, her hand and both feet became swollen and painful. She was then referred to a consultant rheumatologist who diagnosed seronegative polyarticular juvenile rheumatoid arthritis, and ibuprofen was prescribed along with the naproxen, but she began to feel dizzy and complained of having

stomach pains. The naproxen was discontinued and mephanamic acid and indomethacin suppositories were given instead. This was still her medication when she was seen at the homoeopathic outpatient department of the Glasgow Homoeopathic Hospital in Glasgow, Scotland, some 2 months later. By this time, both hands and wrists and both feet and ankles were swollen and painful, and she had not been able to walk for the past week because of the pain in her feet. She had been absent from school for 2 weeks and needed the wheelchair to get about. She looked dejected and gloomy. She liked gymnastics and horse riding but had been unable to enjoy these sports for several months. She was not improving despite taking the ibuprofen, mephanamic acid, and indomethacin.

Three weeks after starting the lipid extract, 3 capsules per day, she was feeling much brighter and better. She had been able to stand and walk about a bit although her feet were still painful. The mephanamic acid had been discontinued but she was still on ibuprofen and indomethacin suppositories at night.

A fortnight later, she was walking well and had been able to return to school, having been absent for 7 weeks. Over the next month she was able to discontinue the indomethacin suppositories and reduce the ibuprofen. She had enjoyed several country walks. Her AI had improved from 30 to 0; her LUT went from 5 minutes to 1 minute; her grip strengths in right and left hands went from 30 to 200 mm of mercury and from 60 to 220 mm of mercury respectively; her VA pain scale went from 6 to 0; and her FI went from 24 to 0. (See Table 1).

She has continued to do well. She was off all orthodox medication within 10 months of first being seen at the Homoeopathic Hospital, and was off the lipid extract 9 months later. Recently, when her school was doing a sponsored walk, she did a sponsored run because she felt so well. Three years after first being seen, she continues to do well on no medication.

### CONCLUSIONS

These cases illustrate how the lipid fraction of the green-lipped mussel *Perna canaliculus*, in three patients with rheumatoid arthritis, ap-

peared to relieve the pain; reduce stiffness and swelling; and enhance grip strength, and the ability to perform routine tasks, as well as improving general well-being. The extract also appears to have a beneficial effect on saliva and tear production in Sjögren's Syndrome.

The anti-inflammatory properties of *Perna canaliculus* are now well proven (Couch, et al., 1982; Kosugi, et al., 1986; Miller, et al., 1993; Rainsford and Whitehouse, 1980; Whitehouse, et al., 1997). These laboratory studies in the 1980s and 1990s have demonstrated the product's anti-inflammatory effects both *in vitro* and *in vivo* while more recent research indicates that the activity may be largely associated with the N-3 essential fatty acids eicosapentaenoic acid and docosahexaenoic acid (Macrides, et al., 1997), which appear to produce inhibition of the lipoxygenase pathway of the prostaglandin system, thus reducing both inflammation and pain without interfering with normal prostaglandin function.

The lipid extract and the stabilized mussel powder from which it is derived, thus, reduce both pain and inflammation without having adverse side-effects on the prostaglandin and immune systems. The extract and powder are, therefore, tolerated better than the usual NSAIDs and are far kinder to the body than second-line drugs, such as sulphasalazine, hydroxychloroquine, or penicillamine. Rather than simply suppressing symptoms, the two products appear to promote healing, as the three cases outlined here illustrate.

These cases were part of a small, randomized double-blind study. The results that were obtained demonstrate clearly the therapeutic potential of these green-lipped mussel preparations and should be confirmed by larger trials carried out in other centers.

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Address reprint requests to:

Sheila L.M. Gibson, M.D., B.Sc., M.F.Hom.  
Glasgow Homoeopathic Hospital  
1053 Great Western Road  
Glasgow G12 0XQ  
Scotland, United Kingdom