

SECTION A

Reading Skills

10 marks

1. Read the following passage carefully:

(1) What Rina Green calls her “living hell” began with an innocuous backache. By late 2022, two years later, pain flooded her entire body daily and could be so intense that she couldn’t get out of bed. Painkillers and physical therapy offered little relief. She began using a wheelchair.

(2) Green has fibromyalgia, a mysterious condition with symptoms of widespread and chronic muscle pain and fatigue. No one knows why people get fibromyalgia, and it is difficult to treat. But eight months ago, Green received an experimental therapy: pills containing living microorganisms of the kind that populate the healthy human gut. Her pain decreased substantially, and Green, who lives in Haifa, Israel, and is now 38, can go on walks — something she hadn’t done since her fibromyalgia diagnosis.

(3) Green was one of 14 participants in a trial of microbial supplements for the condition. All but two reported an improvement in their symptoms. The trial is so small that “we should take the results with a grain of salt”, says co-organizer Amir Minerbi, a pain scientist at the Technion — Israel Institute of Technology in Haifa. “But it is encouraging [enough] to move forward.” The trial results and data from other experiments linking fibromyalgia to gut microbes are published today in *Neuron*.

(4) Fibromyalgia affects up to 4% of the global population and occurs in the absence of tissue damage. In 2019, Minerbi and his colleagues discovered that the gut microbiomes — the collection of microbes living in the intestines — of women with fibromyalgia differed significantly from those of healthy women. This led the scientists to wonder whether a dose of microbes from healthy people would ease the pain and fatigue caused by the condition. After all, previous research had shown that gut microbes might indirectly influence an array of chemical signals tied to pain perception.

(5) The team transplanted minuscule samples of microbe-laden faeces from both women with fibromyalgia and healthy women into mice without any microbes in their bodies. The researchers found that mice that received microbes from women with fibromyalgia showed signs of greater sensitivity to pain in response to pressure, heat and cold than did mice that got microbes from healthy women. The first group also showed more evidence of spontaneous pain.

Baffling chronic pain eases after doses of gut microbes.

<https://www.biopsychology.com/news/index.php?descType=always&id=8&type=bpchapter&page=0>

Answer the following questions based on the above passage:

(i) Which of the following statements best describes the author’s attitude towards microbial therapy?

1 mark

- (A) It is guaranteed to cure fibromyalgia completely.
- (B) Though results are limited, the findings are promising.
- (C) All 14 participants were completely cured of symptoms.
- (D) It is too risky to use without government approval.

(ii) According to the writer, what discovery in 2019 contributed to the idea of using microbes to treat fibromyalgia?

2 marks

(Answer in about 40 words)

(iii) Complete the sentence appropriately:

1 mark

The experimental microbial therapy that helped Rina Green involved taking pills that contained _____.

(iv) The passage includes some words that are opposites of each other.

From the sets (A) – (E) below, identify two sets of antonyms.

1 mark

(A) intense and spontaneous

(B) healthy and affected

(C) cold and heat

(D) unknown and treated

(E) fatigue and pressure

(v) Complete the sentence appropriately:

1 mark

The author suggests that although the trial was small, its results _____.

(vi) Based on the reading of the passage, in about 40 words, explain how mice responded differently to microbes from fibromyalgia patients and healthy women.

2 marks

(vii) As a researcher, if you wanted to further study microbial treatment for fibromyalgia, what would be the most logical next step?

Pick the best answer.

1 mark

(A) Increase the number of trial participants.

(B) Use stronger antibiotics before giving the microbes.

(C) Perform only mouse-based studies.

(D) Test unrelated diseases first.

(viii) “Fibromyalgia is a mysterious condition with symptoms of widespread and chronic muscle pain and fatigue.”

As per this statement from the passage, which is the most accurate description of fibromyalgia?

Pick the best answer.

1 mark

(A) A disease caused by unhealthy lifestyle habits.

(B) A condition that affects only older men.

(C) A disorder linked to gut microbes and chronic pain.

(D) A contagious illness that needs isolation.

ANSWER KEY

(i) Which of the following statements best describes the author's attitude towards microbial therapy? 1 mark

(B) Though results are limited, the findings are promising.

The passage states the trial was small and results should be taken "with a grain of salt," but it was encouraging enough to move forward.

(ii) What discovery in 2019 contributed to the idea of using microbes to treat fibromyalgia? 2 marks

Answer:

In 2019, researchers found that the gut microbiomes of women with fibromyalgia were significantly different from those of healthy women. This led scientists to explore whether transplanting microbes from healthy individuals could reduce fibromyalgia-related pain and fatigue.

(iii) Complete the sentence:

The experimental microbial therapy that helped Rina Green involved taking pills that contained **living microorganisms from healthy human guts.** 1 mark

(iv) Identify two sets of antonyms. 1 mark

(B) healthy and affected
(C) cold and heat

(v) Complete the sentence:

The author suggests that although the trial was small, its results **were promising enough to justify further research.** 1 mark

(vi) How did mice respond to different microbes? (Answer in about 40 words) 2 marks

Answer:

Mice that received microbes from women with fibromyalgia showed greater sensitivity to pressure, heat, and cold, as well as signs of spontaneous pain. In contrast, mice given microbes from healthy women displayed fewer pain responses, indicating a clear difference in pain perception.

(vii) Most logical next step for researchers: 1 mark

(A) Increase the number of trial participants.

(viii) Accurate description of fibromyalgia: 1 mark

(C) A disorder linked to gut microbes and chronic pain.

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