



# OATS AND IMMUNITY

Tirlán is an ingredient solutions partner to some of the world's leading companies and brands. At the forefront of ingredient technology, we offer a range of solutions to match the ever-changing demands of the food and nutrition industry and its consumers. With quality dairy and grains sourced from 5,000 Irish family farms, combined with advanced market research and insights, our unique platform offers fully traceable and sustainably produced natural solutions to help our customers stay ahead of the curve.



# IMMUNITY STARTS IN THE GUT

## Did you know that the majority of the body's immune system is in the gut?

The gut consists of 70–80% of the body's immune cells, 100 trillion gut bacteria and other microorganisms such as viruses and fungi.<sup>1</sup>

The bacteria in the gut communicate with the immune cells, making the gut one of the most important stimulation source for developing immunity.<sup>2</sup>

## Gut health is well established as being important for overall health and wellbeing.

Five major criteria have been identified to define gut health from a healthcare perspective:<sup>3</sup>

1. Effective digestion and absorption of food
2. Absence of gastrointestinal (GI) illness
3. Normal composition and vitality of the gut microbiome
4. Effective immune status
5. Status of well-being.



## How do oats support gut health?

One of the most important nutrients to support gut health is fibre. Oats are a fibre-rich food, with oats flakes contain approximately 9g/100g.

Depending on the country, the daily recommended fibre intake is between 25g–35g. So, one bowl of porridge will provide you with approx. 12% of your daily needs.

However, only a proportion of the world's population meet the recommended daily intake of dietary fibres. For example: In the UK, adults are only consuming 60% of the recommended intake.<sup>4</sup> In the US, approximately only 6% consume the daily recommendations of fibre.<sup>5</sup>

## The importance of fibre

Fibre is important for gut health as it is crucial to maintain a healthy bowel by helping digestion and preventing constipation.

Regular bowel movement helps remove toxins and waste efficiently from the body, promoting general health, and reducing the risk of health implications including colon cancer.<sup>6</sup>

## Claims

The research on oats and its role in digestion is confirmed. Oat grain fibre has an approved claim by European Food Safety Authority (EFSA) with a health relationship established as promoting bowel function through increasing faecal bulk.<sup>7</sup>

However, the research on oats and its specific role in immunity is still emerging.<sup>8,9</sup>

## RESEARCH STUDIES

*A human study investigated the effects of eating oat granola that had 2.9g of beta-glucan. The results showed an increase in beneficial gut bacteria, known as bifidobacteria and lactobacilli.<sup>10\*</sup>*

*Other studies investigated the effects of oat on gut bacteria, recognising oat as a favourable cereal for the growth of gut-friendly bacteria.<sup>11,12</sup>*

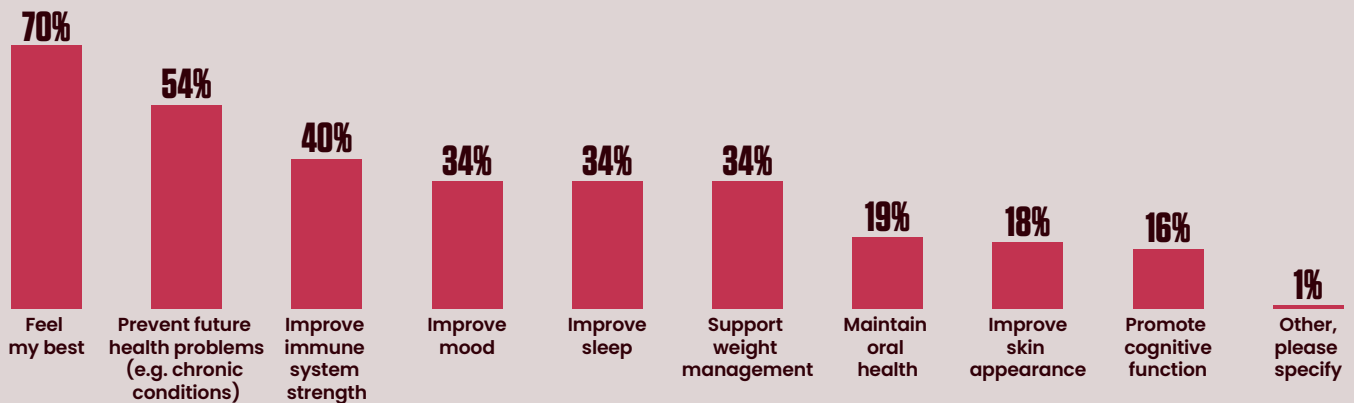
*A review paper accumulated a large number of studies related to antioxidants and the immunomodulatory properties of oat. This paper stated that Avenanthramides, a bioactive compound found in oat, has demonstrated anti-inflammatory and antioxidant benefits. Oat beta-glucan demonstrated similar effects regarding antioxidant effects, due to their ability to reduce lipid peroxidation or to increase antioxidant status.<sup>13\*</sup>*

# WHAT CONSUMERS WANT

Consumers are now more conscious about their immune health and are more aware of the relationship between gut health and its benefits. There is a window of opportunity for food and beverage manufacturers to appeal to health-conscious consumers and address consumers' growing interest in gut health by engaging them with fibre.

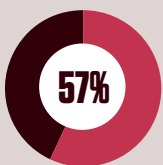
Food and beverages that protect consumers health are thriving, making oats an ideal ingredient to add to your next product launch.

## Consumers associate gut health with immunity, mood, sleep and weight.<sup>14</sup>

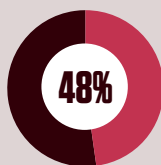


Base: US: 1829 internet users aged 18+ who say maintaining gut health is important to them  
Source: Kantar Profiles/Mintel, June 2021

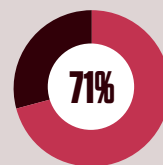
## Consumer insights



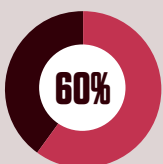
In the US 57% of adults try to eat foods that encourage a healthy gut/microbiome.<sup>15</sup>



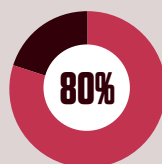
In the US 48% of adults agree they would like to eat more fibre.<sup>15</sup>



In China 71% of adults aged 18-59 think they need to increase their dietary fibre intake.<sup>15</sup>



In Thailand, 60% of consumers are aware of dietary fibres and/or prebiotics (e.g. inulin, beta-glucan) and have used products containing them.<sup>15</sup>



In Italy, 80% of consumers plan to support their immune health through their diet in future.<sup>14</sup>

# OUR OAT INGREDIENTS

## Tirlán has an extensive range of oat flakes and flours that are rich in fibre and beta-glucans.

They can be used in a range of solutions and applications to deliver great-tasting, highly functional and nutritious products.

Sourced from Irish family farms, we take great care to guarantee the highest quality of oats - conventional, organic, and gluten-free. Our oats are an excellent source of nutrition as they are high in soluble fibres, especially beta-glucans, and they naturally contain between 11-13% protein. In addition, they are low in sugar, salt, and saturated fat, and contain a range of minerals such as calcium, iron, magnesium, and zinc. Oats are one of the most promising raw materials for preparation of functional plant-based food.

### OAT-STANDING™

Oats (Jumbo, Groats, Pinhead, Quick Cook)  
(g/100g)

**9.0g**

FIBRE

**3.5g**

BETA-  
GLUCAN

### OAT-STANDING™

Functional Oat Flour LV  
(g/100g)

**6.4g**

FIBRE

**4.2g**

BETA-  
GLUCAN

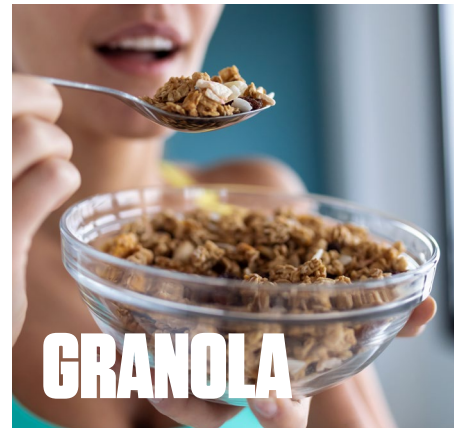
### Oat-Standing™ Oat Flakes

#### Benefits

Our extensive range of oat flakes, include Jumbo, Quick Cook, and Shredded, and can be produced on a bespoke basis to meet your requirements.

Our Oat-Standing™ Oat Flakes are high in fibre, containing 9g/100g, and beta-glucan, containing 3.5g/100g.

Our oats flakes can be used in a range of applications - from breakfast to desserts, in baked and raw treats, delivering excellent functionality.





## Oat-Standing™ Functional Oat Flour

### Benefits

Our Oat-Standing™ Functional Oat Flour is high in fibre, containing 6.4g/100g, and beta-glucan, containing 4.2g/100g.

The Functional Oat Flour can help manufacturers meet demand for gluten free, natural, and functional oat products.

It is an ideal ingredient when you are looking to create natural sweetness, add flavour, nutrition, and consistent viscosity to a wide range of end products.

## DAIRY ALTERNATIVE BEVERAGES



## DAIRY ALTERNATIVE CHOCOLATE



## DAIRY ALTERNATIVE YOGHURT



## PLANT-BASED CHEESE ALTERNATIVES



## DAIRY ALTERNATIVE ICE CREAM



# WHAT MAKES OUR OATS UNIQUE?



## Full Traceability

From seed to finished product



## Consistent Grain Quality

Very high quality specification (54 kph) to deliver consistent grain quality



## Long Shelf Life

18-month shelf-life generated by unique 4.6 log heat treatment



## Contracted Grower Supply

(Co-op Shareholders)  
Grower receives premium to ensure specification is met and encourage grower loyalty to Tirlán



## Oats Only Site

Oats assembled in oats-only site which reduces risk of contamination



## Bespoke Solution Offering

Flexibility to manufacture bespoke products to meet customer' specification



## Global Certification

- Origin Green certified
- Coeliac Society of Ireland
- BRC Food Certified
- AO ECS
- NSF Gluten Free
- FACE certified



## Strict Specification

Each individual tote bag from each bag is sampled and analysed for physical, chemical and microbiological parameters to meet strict specification requirements



## Gluten Free

Gluten free oats are available as part of our portfolio



## State of the Art Milling

Processing occurs in ultra-modern, state of the art oat mill



## Environmental Sustainability

Low CO<sub>2</sub> footprint in Ireland and high yield



# IRELAND'S UNIQUE OAT GROWING ENVIRONMENT



## Cleanest air in Europe

Urban outdoor air pollution index



## Island Location

On the edge of the Atlantic Ocean with plentiful rain



## Trusted Partner

Supporting leading global brands



## Irish farming tradition and heritage

Generational family farms



## Pure water and rich soil

Boost nutritional value



## Temperate maritime climate

Perfect conditions for oat cultivation



## Clean label

Natural, Non-GMO & Kosher

# OUR R&D FUNCTION



## The innovation hub

Our Innovation Hub houses world class facilities enabling us to bring our concepts to life.



## Leading the way in process and technology

Functionalising and developing ingredients whilst always maintaining nutritional integrity.



## Our external ecosystem

Our extensive network of external partners ensures we are agile.



## Developed by our experts

Our team of experts passionately researching the worlds of dairy and plant.



## Providing superior nutrition

At Tirlán the foundations of nutrition are built on dairy and plant. Our ethos: "Good for You, Good for the Planet".



## References

1. Mitsuoka T. Intestinal flora and aging. *Nutr Rev.* 1992 Dec; 50(12):438-46.
2. Koenig, J.E., Spor, A., Scalfone, N., Fricker, A.D., Stombaugh, J., Knight, R., Angenent, L.T. and Ley, R.E., 2011. Succession of microbial consortia in the developing infant gut microbiome. *Proceedings of the National Academy of Sciences*, 108(Supplement 1), pp.4578-4585.
3. Bischoff, S.C., 2011. 'Gut health': a new objective in medicine?. *BMC medicine*, 9(1), pp.1-14.
4. Carbohydrates and Health, Scientific Advisory Committee on Nutrition, 2015, Published by TSO (The Stationery Office); US Department of Agriculture; Agricultural Research Service. *What We Eat in America: Nutrient intakes from food by gender and age. National Health and Nutrition Examination Survey (NHANES) 2009-10.* [http://www.ars.usda.gov/Sp2userfiles/Place/12355000/Pdf/0910/Table\\_1\\_Nin\\_Gen\\_09.Pdf](http://www.ars.usda.gov/Sp2userfiles/Place/12355000/Pdf/0910/Table_1_Nin_Gen_09.Pdf). Accessed December 4, 2014.
5. US Department of Agriculture; Agricultural Research Service. *What We Eat in America: Nutrient intakes from food by gender and age. National Health and Nutrition Examination Survey (NHANES) 2009-10.* [http://www.ars.usda.gov/Sp2userfiles/Place/12355000/Pdf/0910/Table\\_1\\_Nin\\_Gen\\_09.Pdf](http://www.ars.usda.gov/Sp2userfiles/Place/12355000/Pdf/0910/Table_1_Nin_Gen_09.Pdf). Accessed December 4, 2014.
6. Kojima, M., Wakai, K., Tokudome, S., Tamakoshi, K., Toyoshima, H., Watanabe, Y., Hayakawa, N., Suzuki, K., Hashimoto, S., Ito, Y. and Tamakoshi, A., 2004. Bowel movement frequency and risk of colorectal cancer in a large cohort study of Japanese men and women. *British journal of cancer*, 90(7), pp.1397-1401.
7. EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA); Scientific Opinion on the substantiation of health claims related to oat and barley grain fibre and increase in faecal bulk (ID 819, 822) pursuant to Article 13(1) of Regulation (EC) No 1924/2006. *EFSA Journal* 2011; 9 (6):2249. [13 pp.]. doi:10.2903/j.efsa.2011.2249.
8. Martínez-Villaluenga C. & Peñas E., (2017) 'Health benefits of oat: current evidence and molecular mechanism' *Current Opinion in Food Science*, 14: 26-31
9. Udayangani R.M.C., Dananjaya S.H.S., Fronte B., Kim C.H., Lee J., De Zoysa M., (2017) 'Feeding of nano scale oats  $\beta$ -glucan enhances the host resistance against *Edwardsiella tarda* and protective immune modulation in zebrafish larvae' *Fish & Shellfish Immunology*, 60: 72-77
10. Connolly M L, Tzounis X, Tuohy K M, Lovegrove J A (2016) 'Hypocholesterolemic and Prebiotic Effects of a Whole-Grain Oat-Based Granola Breakfast Cereal in a Cardio-Metabolic "At Risk" Population' *Front Microbiol*, 7: 1675
11. Shen, R.L., Dang, X.Y., Dong, J.L. and Hu, X.Z., 2012. Effects of oat  $\beta$ -glucan and barley  $\beta$ -glucan on fecal characteristics, intestinal microflora, and intestinal bacterial metabolites in rats. *Journal of agricultural and food chemistry*, 60(45), pp.11301-11308.
12. Li J, Hou Q, Zhang J, Xu H, Sun Z, Menghe B, Zhang H (2017) 'Carbohydrate Staple Food Modulates Gut Microbiota of Mongolians in China' *Front Microbiol* 8, 484-12.
13. Martínez-Villaluenga C. & Peñas E., (2017) 'Health benefits of oat: current evidence and molecular mechanism' *Current Opinion in Food Science*, 14: 26-31.
14. *The Future of Nutrition, Health & Wellness, 2022*, Mintel.
15. *The future foundation of health starts in the gut, 2021*, Mintel

\*Research is still emerging in this area as the size of the oats may affect the outcomes related to gut health.



### Get in Touch

To find out more about how Tirlán can support you in developing your solutions, please contact us directly.

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 [LinkedIn.com/showcase/tirlan-ingredients](https://www.linkedin.com/showcase/tirlan-ingredients)

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