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Do not include keywords – you can add them when you submit the abstract online.

**Title:**

**Ingestion of CSIRO developed high fibre nuggets leads to beneficial modulation of the gastrointestinal microbiota of autistic adults**

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**Abstract:** (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text into it.)

**Preparation of Your Abstract**

1. The title should be as brief as possible but long enough to indicate clearly the nature of the study. Capitalise the first letter of the first word **ONLY** (place names excluded). No full stop at the end.

2. Abstracts should state briefly and clearly the purpose, methods, results and conclusions of the work.

Introduction: Clearly state the purpose of the abstract

Methods: Describe your selection of observations or experimental subjects clearly

Results: Present your results in a logical sequence

Discussion: Emphasize new and important aspects of the study and conclusions that are drawn from them

Introduction: Autism spectrum disorder is a neurodevelopmental disorder, that is commonly associated with increased risk for severe gastrointestinal dysfunction due, in part, to food selectivity. Food selectivity can reduce consumption of complex carbohydrates leading to an increase in gastrointestinal pathogenic bacteria in people with autism. The gut dysbiosis can lead to significant gastrointestinal symptoms including abdominal pain, diarrhoea, and constipation. Modulation of the gastrointestinal microbiota to increase the presence of beneficial bacteria can occur through an increase dietary fibre intake but requires the fibre to be consumable. Our study developed a novel complex carbohydrate delivery vehicle in the form of a palatable nugget.

Methods: Twelve autistic adults were recruited and ingested six nuggets daily for fourteen days. The previous diets of the participants were assessed using a healthy diet index (HDI) and separated into two groups based on their HDI score, HDI High for a previous diet with a greater fibre intake or HDI Low for previous diet with a lower fibre intake. The participants collected swabs of their saliva/buccal cells and stool samples which were sent to La Trobe University for 16S rRNA sequencing.

Results: Differential abundance results revealed decreases in the opportunistic pathogens *Fusobacterium* in the gastrointestinal microbiota and *Pseudomonas* in the oral and gastrointestinal, in the HDI Low group

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(P-value < 0.001). There was also a decrease in *Escherichia-Shigella* in relation to participants who strongly enjoyed eating the nuggets (P-value < 0.05).

Conclusion: These decreases in the opportunistic pathogens in the oral and gastrointestinal microbiota show the potential for the complex carbohydrate delivery vehicle to positively engineer the microbiota of autistic individuals. By positively influencing the gastrointestinal microbiota of autistic individuals this could lead to improved quality of life through reduced gastrointestinal symptom severity.