MedicalXpress

Autism finding could lead to simple urine test for the condition

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Children with autism have a different chemical fingerprint in their urine than non-autistic children, according to new research published tomorrow in the print edition of the *Journal of Proteome Research*.

The researchers behind the study, from Imperial College London and the University of South Australia, suggest that their findings could ultimately lead to a simple urine test to determine whether or not a young child has autism.

Autism affects an estimated one in every 100 people in the UK. People with autism have a range of different symptoms, but they commonly experience problems with communication and social skills, such as understanding other people's emotions and making conversation and eye contact.

People with autism are also known to suffer from gastrointestinal disorders and they have a different makeup of bacteria in their guts from non-autistic people.

Today's research shows that it is possible to distinguish between autistic and non-autistic children by looking at the by-products of gut bacteria and the body's metabolic processes in the children's urine. The exact biological significance of gastrointestinal disorders in the development of autism is unknown.

The distinctive urinary metabolic fingerprint for autism identified in

today's study could form the basis of a non-invasive test that might help diagnose autism earlier. This would enable autistic children to receive assistance, such as advanced behavioural therapy, earlier in their development than is currently possible.

At present, children are assessed for autism through a lengthy process involving a range of tests that explore the child's social interaction, communication and imaginative skills.

Early intervention can greatly improve the progress of children with autism but it is currently difficult to establish a firm diagnosis when children are under 18 months of age, although it is likely that changes may occur much earlier than this.

The researchers suggest that their new understanding of the makeup of bacteria in autistic children's guts could also help scientists to develop treatments to tackle autistic people's gastrointestinal problems.

Professor Jeremy Nicholson, the corresponding author of the study, who is the Head of the Department of Surgery and Cancer at Imperial College London, said: "Autism is a condition that affects a person's social skills, so at first it might seem strange that there's a relationship between autism and what's happening in someone's gut. However, your metabolism and the makeup of your gut bacteria reflect all sorts of things, including your lifestyle and your genes. Autism affects many different parts of a person's system and our study shows that you can see how it disrupts their system by looking at their metabolism and their gut bacteria.

"We hope our findings might be the first step towards creating a simple urine test to diagnose autism at a really young age, although this is a long way off - such a test could take many years to develop and we're just beginning to explore the possibilities. We know that giving therapy to

children with autism when they are very young can make a huge difference to their progress. A urine test might enable professionals to quickly identify children with autism and help them early on," he added.

The researchers are now keen to investigate whether metabolic differences in people with autism are related to the causes of the condition or are a consequence of its progression.

The researchers reached their conclusions by using H NMR Spectroscopy to analyse the urine of three groups of children aged between 3 and 9: 39 children who had previously been diagnosed with autism, 28 non-autistic siblings of children with autism, and 34 children who did not have autism who did not have an autistic sibling.

They found that each of the three groups had a distinct chemical fingerprint. Non-autistic children with autistic siblings had a different chemical fingerprint than those without any autistic siblings, and autistic children had a different chemical fingerprint than the other two groups.

Provided by Imperial College London