

New corn fibre gum extraction process offers emulsion boost

By Nathan Gray, 15-Sep-2011

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A new process to isolate corn fibre gum and preserve more of its functional components may contribute to better emulsifying properties, say researchers.

The new isolation technique, developed by researchers from the US Department of Agriculture (USDA), is a further step in the development and expansion of the uses of [corn fibre gum](#), which the authors have previously said has potential to [eventually replace gum arabic](#) as an emulsifying agent .

The research team, led by Dr Madhav Yadav from the USDA's Agricultural Research Service, said that the new extraction process, which preserves more of the corn's functional components such as proteins and lipids, will help to produce a corn fibre gum that has better emulsifying properties.

"Our results have also shown that 'pure' corn fibre gum fractions often contain considerable amounts of associated lipids, phenolic acids and proteins which contribute to its emulsifying properties," said Yadav and his team.

"The extraction of corn fibre gum with alkaline hydrogen peroxide was investigated using different combinations of alkali concentration and time to identify the optimum extraction condition to retain its functional groups (protein, lipids and phenolic acids)," they added.

Writing in the journal [Carbohydrate Polymers](#) , the researchers said that the results *"clearly indicate"* that to preserve such functional components, corn fibre gum needs to be extracted with a low alkali concentration and a short heating time at 100°C in presence of hydrogen peroxide.

Arabic replacement

Gum arabic, otherwise known acacia gum, is widely used in the food and beverage industry; however the supply of the ingredient is known to be variable due to the many political and climatic factors in the primary producing areas such as Sudan and Nigeria.

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Attempts to find alternatives have led researchers, particularly in the US, to investigate the potential for using corn fibre – a readily available and low cost by-product of the corn milling industry.

Previous research has previously shown that the corn fibre, which contains a large percentage of valuable hemicelluloses, could be used as a thickener, adhesive, and stabiliser in food products – however the research is ongoing in developing a way to use the gum as an emulsifying agent.

Yadav and colleagues explained that previous studies have indicated corn fibre gum to be as good as, or even superior to, gum arabic as an emulsifier in oil-in-water [emulsion](#) systems.

However, they said that the new research aimed to develop an optimum isolation method for corn fibre gum extraction in order to preserve the functional – protein and lipid, known for emulsion stabilizing activity – and nutraceutical – phenolic compounds, known to be antioxidants and antimutagen agents – components.

They said that a better isolation of the corn fibre gum with these functional components would lead to better performance in emulsion systems.

Source: [Carbohydrate Polymers](#)

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"A New Corn Fiber Gum Polysaccharide Isolation Process that Preserves Functional Components"

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