Plant-based gummy candy helps vegans and vegetarians get their vitamins
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A strawberry-flavored vegan gummy candy (approximately half an inch wide) made with plant-based ingredients is enriched in vitamins B12 and D3. Credit: ACS Food Science & Technology

Worldwide, millions of people follow vegan and vegetarian diets for religious, ethical, environmental or economic reasons. While these diets have purported health benefits, they can also lack essential nutrients, such as vitamins B12 and D3, if not well-planned or supplemented correctly. Now, researchers reporting in ACS Food Science & Technology have packed a strawberry-flavored gummy with these vitamins, formulating it without any animal products so vegans and vegetarians can reach their recommended daily allowances (RDA).

Some essential vitamins and minerals, such as vitamin B12, are found exclusively in animal products, while others can be obtained from other sources. For example, humans can make vitamin D3 when their skin is exposed to sunlight, but many people aren't outside enough to meet the requirement for this vitamin. Therefore, it is primarily consumed through fish, eggs and organ meats, which are not eaten by vegans and some vegetarians. To avoid the pitfalls of vitamin deficiencies, people who adhere to plant-based diets often take supplements, but it's been challenging to put both vitamin B12 and vitamin D3 in one pill because of their differing solubilities. One solution could be to put them into emulsion-filled gels, such as gummy candies. Previous researchers have shown that pectin, a plant-based polysaccharide, can be used as a gelling agent in animal product-free foods. So, Samantha Pinho and colleagues wanted to see if they could use only plant-based ingredients, such as pectin, to produce a gummy candy enriched with vitamins B12 and D3 that would be acceptable to consumers.

The researchers first made an emulsion, combining citrate buffer, inulin, gum arabic, flaxseed oil and vitamin D3, and separately made the pectin gel, dissolving a type of pectin, calcium chloride and vitamin B12 in a citrate buffer. Then, by rapidly stirring the emulsion into the pectin gel with sugar, the team produced an emulsion-filled gel. The gel became a reddish gummy material after it dried. To develop this into a suitable food product, the researchers added a natural strawberry flavor and molded the gel into half-inch-wide candies. In sensory tests, 120 untrained panelists gave the gummies high scores for taste, color, aroma and overall acceptability. About half of the panelists said they would buy the enriched gummy, with another 36% saying they might buy the product. The researchers say their results pave the way to make food products more nutritious.

More information: Marluci Ghiraldi et al, Emulsion-Filled Pectin Gels for Vehiculation of Vitamins D3 and B12: From Structuring to the Development of Enriched Vegan Gummy Candies,