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**METHOD OF IMPROVING THE WHIPPING  
AND SETTING PROPERTIES OF MARSH-  
MALLOW USING GLYCOLS**

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5 Claims

**ABSTRACT OF THE DISCLOSURE**

Method of preparing an improved gelatin-containing marshmallow formulation comprising incorporating there-  
in a minor amount of a glycol and/or polyglycol additive.  
A minor amount of a polyphosphate may also be added.  
Resulting product possesses low density and improved  
whipping and setting properties.

This invention relates to improvements in the prepara-  
tion of marshmallows and to improved products resulting  
therefrom.

Marshmallow is prepared by whipping a sugar syrup  
into a colloidal foam. In order to stabilize the foam pre-  
pared, a small amount of gelatin, usually from about  
1.4% to about 3.0% is added in order to obtain the desired  
stability.

The desired properties of a good marshmallow formu-  
lation and product are (1) fast whipping qualities, (2)  
minimum density, (3) fast setting qualities, (4) stable  
foams, that is foams which have a minimum leakage, and  
(5) tenderness.

Various materials have been employed in order to  
enhance the above properties in marshmallow formu-  
lations. Materials which have been attempted in the past  
include esters of phosphoric acid, esters of organic acids,  
inositol-phosphoric acid condensation products, sorbitol  
and glycerine. While these materials are usually of some  
value, they have been observed either to give only a lim-  
ited improvement in one of the above properties and/or  
to result in a concurrent decrease in one or more of the  
other desired properties of the marshmallow formulation.

There is a continuing need in the industry for improved  
marshmallow formulations, particularly formulations  
which result in a marshmallow product of a lower density  
than those heretofore obtainable.

Therefore, it is an object of the present invention to  
provide a method for preparing improved marshmallows.

It is a further object of the present invention to provide  
a process for preparing a marshmallow having a low  
density.

It is another object of the present invention to provide  
an improved marshmallow product.

Additional objects if not specifically set forth herein  
will be readily apparent to those skilled in the art from  
the following detailed description of the invention.

Generally, the present invention relates to improve-  
ments obtained by the incorporation into marshmallow  
formulations of a minor amount of a material selected  
from the group consisting of dihydroxy alcohols con-  
taining at least 3 carbon atoms and related polyglycols  
having a molecular weight of from about 76 to about 500.  
In addition, the present invention also relates to pre-  
ferred results obtained when using these compounds  
in combination with polyphosphates in marshmallow  
formulations.

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Of the dihydroxy alcohols suitable in the present inven-  
tion, the lower molecular weight glycols having at least  
3 carbon atoms have been found to be most effective,  
with propylene glycol and 1,3-dihydroxy butane being  
examples of the preferred glycols. Glycols such as dieth-  
ylene, dipropylene and polyethylene or polypropylene gly-  
cols having up to an average molecular weight of 400 are  
also suitable for the purposes of the present invention.  
To the contrary, however, ethylene glycol is not effective  
in the present invention, nor are the tri- and higher poly-  
hydric alcohols, such as glycerol and sorbitol. In the se-  
lection of the suitable glycol one must consider the as-  
pects of toxicity and general suitability for incorporation  
into food products.

Polyglycols suitable in the present invention are the  
liquid polyglycols including propylene glycol, trimethylene  
glycol, ethylene butylene glycol and dipropylene glycol  
and their polyethers having molecular weights up to about  
500. Polyglycols having a molecular weight of from about  
76 to about 134 are preferred in the present invention.  
Usually the alkyl alcohols such as glycol ethers having  
not substantially in excess of about 7 glycol units will be  
preferred.

The following examples are presented for the purpose  
of illustration only and are not to be construed as limit-  
ing the scope of the invention.

**EXAMPLE I**

In order to test the effectiveness of various polyhydric  
alcohols, the following materials were whipped together  
for six minutes in order to prepare a marshmallow:

	Grams
Sugar (sucrose) -----	240
Corn syrup -----	120
Gelatin -----	7.5
Water -----	120

In addition to the above formulation, various other  
formulations were prepared using the same amounts of  
material and adding thereto 4% (basis gelatin) of various  
polyhydric alcohols.

The result of these tests are set forth in Table 1, wherein  
the density of the marshmallow is expressed in the con-  
ventional term "pounds per gallon."

**TABLE 1**

Additive:	Density (lbs./gal.)
Control -----	3.20
Propylene glycol -----	3.03
Sorbitol -----	3.25
Glycerol -----	3.20
Ethylene glycol -----	3.20
1,3-dihydroxybutane -----	3.07

In addition to the above additives, it has been noted  
through experimentation that no monohydric alcohol ap-  
pears to be effective for the present purpose.

**EXAMPLE II**

As illustrated by the above table, propylene glycol is  
the preferred additive for the present invention. In order  
to determine the optimum percentage of propylene glycol  
that should be employed, different marshmallow samples  
having the above stated formulation, but with varying  
amounts of propylene glycol, were prepared. The follow-  
ing table sets forth the results obtained by this experiment.  
As in the preceding table, the percent additive is based  
upon the gelatin present in the formulation and the