

May Baking Soda Be Used During Pesah?

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SHE'ELAH

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TESHUVAH

A standard text on baking describes the role of baking soda in the baking process [Wilfred J. Fance, editor, *The New International Confectioner* (Los Angeles: Continental Publications, 1973), 37]:

Aeration renders bakery products more attractive, more appetizing and more digestible. In order to aerate, a pressure must be induced within the product and a resistance offered to it so that volume may be increased during baking, until such time as the proteins coagulate and the volume is maintained without any collapse. There are five methods of aeration: (1) Panary -- yeast; (2) Chemical -- baking powders; (3) Physical -- whisking and beating; (4) Lamination -- rolling and folding; and (5) Combinations of the above.

Only two of the five methods listed, panary and chemical, are relevant to the question of the use of baking soda during Pesah.

The panary method of aerating baking products was originally accomplished by mixing a piece of old dough which had become leavened into new dough and allowing the dough to stand and ferment. The French scientist Louis Pasteur discovered that the process of fermentation was not a spontaneous phenomenon, but the result of living yeast micro-organisms

converting sugar into carbon dioxide gas (CO₂), which leavened or aerated the dough. In the early part of the twentieth century, compressed yeast was introduced to more efficiently start the fermentation process.

The second method of aerating bakery products is to utilize chemicals which give off gas. The gas expands the volume until such time as the proteins are coagulated by heat and the volume can be maintained without any collapse. The simplest chemical utilized is pure bicarbonate of soda (sodium bicarbonate), which interacts with an acidic ingredient (e.g., lactic acid or citric acid), releases CO₂, and aerates the dough. Bicarbonate of soda is known in the trade as baking soda.

The baking industry developed another product which combined baking soda with cream of tartar, and which is known in the trade as baking powder. Later, other substitutes such as aluminum sulfate, calcium sulfate, calcium acid phosphate and calcium silicate, were used to take the place of the more expensive cream of tartar. Baking powder also contains cornstarch.

The biblical prohibition of the use of *hametz* during Pesah seems to be directed against panary fermentation, allowing dough to age and ferment.

וישא העם את בצקו טרם יחמץ משארותם צררת בשמלתם על שכמם.

So the people took *their dough before it was leavened*, their kneading bowls wrapped in their cloaks on their shoulders. (Ex. 12:34)

ויאפו את הבצק אשר הוציאו ממצרים עגת מצות כי לא חמץ כי גרשו ממצרים ולא יכלו להתמהמה.

And they baked unleavened cakes of the dough that they had taken out of Egypt, *for it was not leavened, since they had been driven out of Egypt and could not delay*. (Ex. 12:39)

Later rabbinic authorities defined *hametz* as a fermented mixture of any one of the five types of grain: wheat, rye, spelt, barley and oats. The period required for fermentation is generally 18 minutes, assuming that the mixture is not kneaded during this time. Leavening is caused when the grain or grain products come into contact with water. However, if the grain is moistened by other liquids such as undiluted fruit juice, the process is *not* considered leavening.

חמשת מיני דגן אלו, אם לשן במי פירות בלבד בלא שום מים לעולם אין באין לידי חמוץ אלא אפילו הניחן כל היום עד שנתפח הבצק מותר באכילה שאין מי פירות מחמיצים אלא מסריחין.

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If dough is made out of these five kinds of grain with plain fruit juice undiluted with water, it never becomes leavened, and may be eaten even if it is left all day long until it swells, for fruit juices cause not leavening, but putrefaction. (Mishneh Torah, *Zemanim, Hametz U'matzah* 5:2)

The idea that undiluted fruit juice does not cause leavening is accepted by the Shulhan Arukh:

מי פירות בלא מים אין מחמיצין כלל ומותר לאכול בפסח מצה שנלושה במי פירות אפי' שהתה כל היום.

Undiluted fruit juice does not cause leavening, and it is permissible on Pesah to eat matzah kneaded with fruit juice even if it is left all day long. (*Orah Hayyim* 462:1)

The chemical release of gas is also a different method of increasing the volume of dough, and would similarly not be included in the prohibition against *hametz*.

CONCLUSION

Hence, the use of baking soda, pure bicarbonate of soda, during Pesah would not be prohibited for baking or other purposes. However, several restrictions need to be added:

- (1) To avoid possible errors, baking soda should be used only to bake cakes with special kosher-for-Pesah meal.
- (2) A fresh unopened container of baking soda should be used for Pesah.
- (3) Baking powder may not be used because the presence of cornstarch among the ingredients raises different questions about its use on Pesah.

