SODIUM BICARBONATE: AN EXCELLENT DEODORANT

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The proprietary products used to combat axillary odors have long depended on the inhibition of perspiration through the action of aluminum and zinc salts. Preparations containing these salts are sold under various trade names and enjoy wide popular use. There is no doubt that many of these preparations have been irritating to a considerable number of users.

A more recent type of deodorant is that which depends upon the incorporation of antiseptics (such as a weak dilution of formaldehyde) in a perfumed base. The antiseptics are supposed to inhibit bacteria that decompose the fats in the sweat residues.

Menthol and camphor are examples of other chemicals which have a deodorizing value but are not as popular in their commercial use. The agents in this group are of value because of their own volatile and odorous properties.

Oxygen-bearing and oxygen-releasing drugs are also utilized e.g. the perborates, peroxide and oxyquinoline sulfate. The effectiveness of many of these deodorants lasts for only short periods of time and by the end of the day there is often a combination of the fetid odor of sweat plus the cheap odor of perfume. However, they are not as likely to be irritating as the above mentioned anti-perspirants.

The present study has as its object the development of some simple, easily applied inexpensive product which could be used by the male[1] as well as the female and would be primarily a deodorant rather than an anti-perspirant.

Several years ago a neighbor and friend informed me that he had used plain sodium bicarbonate as an underarm deodorant for about a year and had found it non-irritating and a fine deodorant.

Since that time a study has been made of 63 senior medical students of the School of Medicine of the University of Oklahoma, of my entire family, of numerous patients and of some 15 friends.

The senior medical class was examined once a week during their period of clinical work in the department of Dermatology and Syphilology; nine students at a time for a period of one month. During that month, they used bicarbonate of soda as an underarm deodorant. In the small clinic cubicles the excellent action of the bicarbonate of soda was daily recognized. Any student who had failed to use the preparation on the day of examination was usually easily detected by both the instructor and the students by the olfactory sense. Each of the 63 members of the senior medical class was given a questionnaire at the end of the year. This was answered in the following manner:

[1] In all investigations of deodorants for universal use, it is to be recalled that in the male the hair is usually not shaved from the axillary areas and when the deodorant cream or other preparation becomes dried there is a resultant disagreeable sensation from the matted hairs.

(1) Did you find sodium bicarbonate to be a good deodorant?
Yes 63
No 0

(2) Did you ever notice any irritation after its use for several weeks?
Yes 5
Slight irritation 3
Chafing 1
Pruritus 1
No 58
Complained of white circles in the armpits of brown army shirts (this objection can be overcome in females by use of protective shields) 2

(3) How long did you use the product? ..... 4 weeks to 1 year

(4) Are you still using the product?
Yes 42
Irregularly 21

All testimonies of the others using the preparation, as well as my own personal opinion has been that it is an excellent deodorant and lasts through the entire day. No one has complained of any furunculosis resultant from a change in the bacteriostatic effects of sweat.

Several other dermatologists have tried sodium bicarbonate as an underarm deodorant at my suggestion. One (1) of these has reported excellent results in all of his patients. A few of this doctor's patients reported slight stinging under the arms. For these he has diluted the sodium bicarbonate in the following prescription:

Oil of lavender	0.2
Rice starch	1.0
Magnesium oxide	5.0
Sodium bicarbonate	20.0
Talc qs	60.0

In our own private patients we tested the treatment on a series of cases of extreme bromidrosis, so repulsive that neither the doctor nor the nurse could be other than cogizant of the fact during the whole examination. It was explained to these patients that we were testing a new deodorant and sodium bicarbonate was applied in the axillary areas only. The effect was immediate. The room was cleared of any perceptible odor and most of the patients were extremely grateful for the suggestion of a cheap method of stopping the fetid odors of sweat.

DISCUSSION

In the literature there is little mention made of the use of bicarbonate of soda as a deodorant. Goodman (2) recommends its use only as an ingredient with sodium perborate, glycerin and water in a deodorizing prescription for a perspiration deodorant. The deodorizing value of this prescription was accredited to the oxygen releasing properties of the perborate but in all probability the value was in the sodium bicarbonate. He also suggested the use of sodium bicarbonate

with borax and calcium carbonate for a foot perspirant deterrent. This combination is used as a powder for a foot bath.

The chemical explanation of why bicarbonate of soda should act as a deodorant is of interest. Sweat (3) has an acid reaction, Ph of 5.2–6.75 which is due to the fatty acids or acid phosphates of sodium and potassium which it contains. It also contains NaCl, KCl, alkaline salts, organic acids and urea.

Minute amounts of unstable fats and oils are secreted in sweat and hydrolysed to their corresponding fatty acids and glycerin. Free fatty acids may be secreted. Many of these acids are volatile and have a characteristic disagreeable odor. These include butyric acid, formic acid, caproic acid and valeric acid.

The following are among the possible explanations of the manner in which sodium bicarbonate acts as a deodorant in the axilla.

1. It forms a sodium salt with butyric, caproic and valeric acids. These sodium salts are comparatively mild in odor in comparison to the volatile "rancid-smelling" fatty acids.

2. By changing the Ph of the axillae, the bacteria which decompose the fats are unable to act. However, as a result of this the staphylococcic flora which prefer higher alkalinity might thrive and axillary furunculosis might result.

No cases out of 90 persons both male and female using the product have shown any furunculosis of the axillae.

In the author's opinion this fact speaks somewhat in favor of the first mechanism and rather against the second mechanism of action. However the entire problem of mechanism of deodorant action requires elucidation through careful and extensive investigation.

SUMMARY

1. Clinical studies on more than 90 persons have indicated that bicarbonate of soda is a valuable underarm deodorant for common daily usage.

2. No furunculosis has developed in over 90 cases which have used bicarbonate of soda over periods of from four weeks to a year's duration.

3. The possible mechanism of the deodorant action of bicarbonate of soda is mentioned as requiring further study.

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