



TECHNICAL DATA SHEET:  
BERAMINERAL DEO

---

---



**BERACA** presents a wide portfolio composed of fixed oils, butters, scrubs, clays and actives sustainably sourced from the Brazilian biodiversity. Most of the time, the ingredients sold by the company are directly related to the work developed by extractive communities throughout Brazil. Through the Socio-Biodiversity Enhancement Program<sup>®</sup>, the company connects biodiversity to thousands of consumers around the world. This means, among other advantages for our stakeholders, transparency, traceability and innovation, which directly contribute to regional development and environmental preservation of different biomes in the country.





---

## GENERAL INFORMATION

BERAMINERAL DEO has a 100% mineral origin. Its main component is the silicon dioxide, besides aluminum oxide and ferric oxide – which provides, among other properties, water absorption. It has a light green color and maximal granulometric distribution of 20 µm. Due to its natural origin, its use does not cause irritations nor sensitization.

After being extracted, homogenized, and dried under sunlight, BERAMINERAL DEO is milled and micronized, and finally it is decontaminated by heating, what assures its ideal body care properties.

This process is carried out using methods that guarantee good practices in each phase, as well as a corporative social responsibility – by the management of both social and environmental risks with a continuous improvement approach.

## PROPERTIES

- Promotes improvements in the sensorial of formulations, adding fast drying and oily touch reduction;
- Shows a booster action in both deodorant and antiperspirant systems, increasing these formulations efficacy.

## COSMETIC USE

Due to its properties of transpiration and bad odor reduction, BERAMINERAL DEO is indicated for the cosmetic use in:

- Body, feet and hands products (emulsions in general, gels, pomades, tonics, liquid and barsoaps, etc);
- Antiperspirant and/or deodorant products, bad odor and sweat reduction products (roll on, aerosols, talcs, sticks, bars, sprays, emulsions in general, gels, etc);
- Natural and organic products.

## EFFICACY EVALUATION

### INTRODUCTION

Transpiration is a fundamental function of the skin; it is the key mechanism of the thermal balance by keeping stable the body temperature. The sweat secretion is odorless. The bad odor (bromhidrosis) is a result of the bacterial action that decomposes sweat into low molecular weight fat acids, besides mercaptanes, indoles, ammonia and amines. These degradation by-products are both volatile and bad-odored.

---



The degradation process occurs mainly in more humid and warm body areas as, for example, armpits. In that areas the bacterial flora grows and the pH becomes more alkaline; microorganisms that are more associated with this process are *Staphylococcus aureus* and *Staphylococcus epidermidis*.

Usual deodorants may act on the transpiration through four main processes:

- Limiting bacterial proliferation (bactericides), they hinder the degradation process, but do not stop the transpiration. Examples: dichlorophen, quaternary ammonia salts, and halogenated salicylic esters;
- Blocking the sweat diffusion without suppressing its secretion (astringents). Examples: aluminum salts - sulfate, chloride, and chlorohydrate;
- By physical-chemical absorption, this is, through molecules absorbing bad-odor products resulting from the sweat degradation, by molecular inclusion and chelation. Example: zinc ricinoleate;
- Enzymatic inhibition – products inhibiting the sweat degradation by an enzymatic action, inhibiting the stearase – Hydroxycarboxylic ester and triethyl citronic acid ester.

A deodorant product evaluation can be performed by olfactive method (anti-odor activity), bacterial cultures (antimicrobial activity and sweating quantitative measurements - antiperspirant activity).

With this scenario in mind, Beraca investigated the BERAMINERAL DEO potential as a natural adjuvant active with antiperspirant and deodorant activities.

## OBJECTIVE

This study purpose was evaluating the BERAMINERAL DEO adjuvant action in antiperspirant and deodorant activities, for 24 hours, after the topical use of an antiperspirant formulation.

## METHODS

### 1. Laboratory

The study was carried out in an independent laboratory, the *Allergisa Pesquisa Dermato-cosmética Ltda*. Study reference code: All-E-DA-056005-01/02-07-16.

### 2. Experimental and Treatment Groups

Experimental groups and their respective treatments are shown in Table 1.

**Table 1.** Test products used in the study.

Experimental Group	Treatment
PLACEBO	Antiperspirant without Beramineral Deo
BERAMINERAL DEO	Antiperspirant with Beramineral Deo



### 3. Methodology

#### 3.1 Volunteers and Method

To perform the test, 30 female volunteers, aged between 18 and 60-year-old, were selected according to their test areas (armpits) health status.

Volunteers were instructed to follow a routine of 21 days washing both armpits. In the first 14 days, they should wash the test area with a standard soap and then they should apply a standard bacteriostatic deodorant. From the 15<sup>th</sup> day, they should not apply any other product on this area, and should interrupt the use of the standard deodorant, thus following only with their standard soap.

Before the washing evaluation, the volunteer's armpit cleaning was done with a cotton swab, in order to see the presence of aluminum residuals that commonly are present in antiperspirant products.

During the test period volunteers received T-shirts (100% cotton) to collect sweat. These T-shirts were previously washed with water and fragrance-free soap.

The test area was a 150 cm<sup>2</sup> surface marked in each armpit. Randomly, onto one of these areas only PLACEBO was applied, and on the other, the antiperspirant containing BERAMINERAL DEO was applied. These applications occurred in four consecutive days.

#### 3.2 Odor evaluation

Three trained technicians evaluated their armpit odor after the 4<sup>th</sup> day of test products application.

Volunteers were instructed to enter the testing room individually. To minimize interference from external odors, the shirts were removed during the assessment, which consisted of odor verification using an 11-point scale (ASTM, 1993), as can be seen in Table 2.

**Table 2.** Scale of points for the armpit odor perception.

Scale	Level of bad odor
0	None – odor absence
1	Low
2	Light
3	Medium
4	Medium to moderate
5	Moderate
6	Lightly strong
7	Moderately strong
8	Strong
9	Very strong
10	Extremely strong



### 3.3 Sweat evaluation

After 24 hours from the 4<sup>th</sup> test products application, in the odor's evaluation sequence, volunteers were placed in a dry sauna, remaining there for 80 minutes in a temperature of  $37.8 \pm 1^\circ\text{C}$ , and relative humidity between 20 and 40%. For collecting the volunteers sweat, pillows were put under volunteers' arms after a 40-minute exposure, in order to retain their sweat, and these pillows were changed by new ones after 20 and 40 minutes from the initial time. The amount of sweat collected was considered as the pillows weight difference, measured before and after the test.

The initial time corresponds to 40 minutes of exposure, and it was considered as the acclimatization period of volunteers. For sustaining their hydration and consequently the free weating flow each volunteer drunk 200 mL water before entering the sauna.

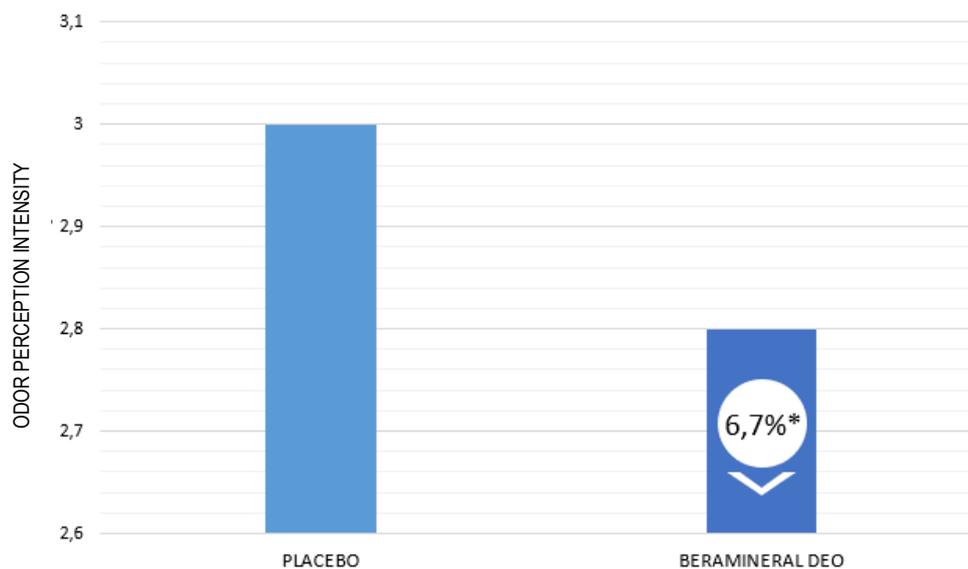
### 3.4 Statistical analysis

Results obtained were analyzed by softwares MINILAB 14 and XLSTAT 2016 using the comparison method for the *t-Student* test, with a 95% ( $p < 0.05$ ) confidence level.

## RESULTS

### 1. Odor evaluation

The Graphic 1 below shows the odor intensity perception measurement averages obtained by trained technicians' evaluations.



\* Statistical significance  $p < 0.05$  when compared with PLACEBO.

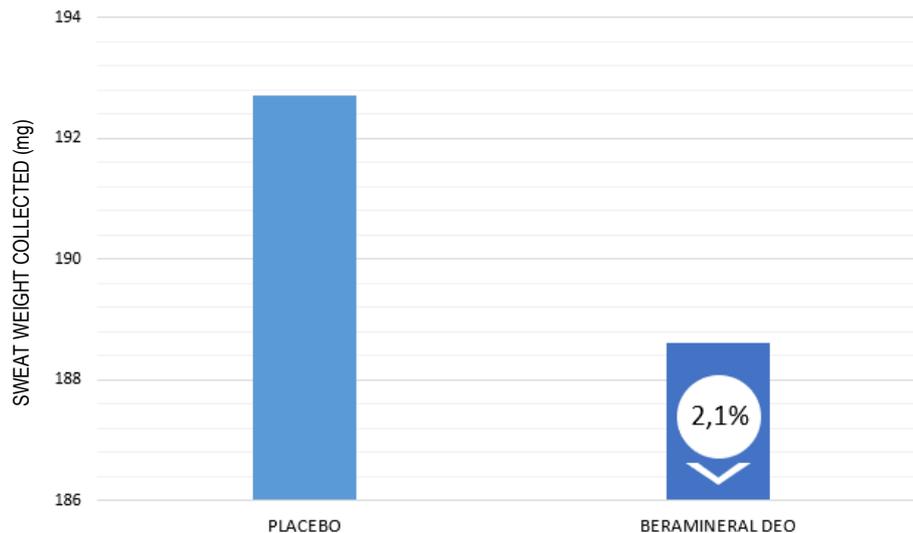
**Graphic 1.** Average intensity of sweat perception after PLACEBO treatment and with the BERAMINERAL DEO-containing antiperspirant.



According to Graphic 1 it is possible to observe that, although not presenting statistically significant difference in relation to PLACEBO, the antiperspirant containing BERAMINERAL DEO is able to maintain the low level of perceived bad odor.

## 2. Sweat collection

The BERAMINERAL DEO antiperspirant action can be seen in Graphic 2, showing the sweat weights difference after the pillow's measurement before and after the volunteer's exposure to the dry sauna.



\* Statistical significance  $p < 0.05$  when compared with PLACEBO.

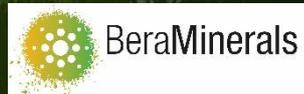
**Graphic 2.** Sweat weight measured in pillows, in mg, after the volunteers' exposure to steam room.

In Graphic 2 we can see volunteers transpiration reduction after the treatment with BERAMINERAL DEO-containing antiperspirant, when compared with Placebo.

Thus, according to what is seen in Graphics 1 and 2, it can be seen that the antiperspirant containing BERAMINERAL DEO reduced by 6.7% and 2.1% both transpiration and bad odor, respectively, when compared with the Placebo antiperspirant.

## CONCLUSION

Based on the obtained results BERAMINERAL DEO, in addition to being a 100% natural ingredient, showed proved efficacy as an adjuvant agent in deodorant and antiperspirant formulations, reducing both transpiration and bad odor, and this product may be indicated for the concentration reduction of non-natural antiperspirants in these formulations.



## **BERACA INGREDIENTES NATURAIS S.A.**

Rodovia BR 316, Km 08, Quadra 03, Lote 03  
Levilândia - Ananindeua  
Pará - Brazil  
Phone: +55 (91) 3215-5200