

Review for Education Section

Brief Homeopathic Pathogenetic Experimentation: A Unique Educational Tool in Brazil

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In homeopathy, many difficulties are encountered in understanding theoretical presuppositions because they represent different paradigms from those of hegemonic science. In our medical school, we developed a brief homeopathic pathogenetic experimentation course to be added as curricular content and a didactic method in homeopathic disciplines to add practical experience to the theoretical approach of homeopathic presuppositions. In accordance with the premises laid out by Hahnemann, the father of homeopathy, brief pathogenetic experimentation was offered on a voluntary basis for students who were free of chronic diseases and who had not regularly used medication in the last 3 months. The clinical test, either crossed or sequential (randomized and blind), was used as a study model. Single weekly doses of a homeopathic medicine of 30 cH or placebo were taken by participants during 4 weeks after which crossover of the experimented substances took place for another 4 weeks. Polycrest medicines were used so that symptoms developed by the participants could be compared to those described in Homeopathic Materia Medica. Thirty-three of the 50 students who studied homeopathy as an elective discipline over the last 4 years at the School of Medicine of the University of São Paulo (FMUSP) participated. Participants described symptoms according to specific methodology including many comments with peculiar characteristics and notable idiosyncrasies. All these students endorsed the course because it contributed to their understanding of how dynamized substances produced symptoms in healthy participants as well as the cure of symptoms according to the casual similitude principle. Brief homeopathic pathogenetic experimentation proved to be an effective method to observe the idiosyncratic manifestations of human individuality based on qualitative methodology, thus building a basis of understanding of homeopathy.

Keywords: Homeopathy – medical education – undergraduate medical education – pathogenesis – homeopathic pathogenetic trial – homeopathic pathogenetic experimentation

Introduction

Doctors and students involved in homeopathic teaching are aware of the difficulties related to understanding homeopathic presuppositions because the paradigms differ from those of hegemonic science. To achieve understanding, these heterodox principles should be

taught by an experimental approach that permits incorporation of the theoretical concepts with cognition to form an irrefutable truth for all those who observe and experience the phenomena. Similar to research in basic and clinical areas, that attempt to explain the homeopathic pillars according to modern scientific rationale (1–11), pathogenetic re-experimentation of previously studied homeopathic medicines, with the description of well-established symptoms, provides an important subsidy for acceptance of the principle of similitude, the healthy man experimentation and dynamized medicine.

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Creditability of the student experimenter in the scientific proposal of the homeopathic model is increased by experiencing the appearance of new symptoms, disappearance of current symptoms or the return of previous ones, with subsequent confirmation that these symptomatic manifestations with the substances ingested in infinitesimal doses are described in other experiments of Homeopathic Materia Medica (HMM). This was observed and reported in initiatives using classic homeopathic pathogenetic experimentation as a teaching method in homeopathy specialization courses (12–19) (graduate or master degree *latu sensu*) following the ‘Protocol of Homeopathic Pathogenetic Experimentation in Humans’ of the Brazilian Homeopathic Medical Association’s Research Commission (AMHB-CP) (20).

We describe the introduction of brief homeopathic pathogenetic experimentation as a curricular item and didactic method applied to an elective discipline ‘Foundations of Homeopathy – MCM0773’, (21) taught at the School of Medicine of the University of São Paulo (FMUSP), since 2003.

Objectives

- (i) Propose inclusion of the brief homeopathic pathogenetic experimentation as a curricular item and didactic method in homeopathy disciplines taught at medical schools, so that theoretical knowledge of the homeopathic presuppositions (principle of similitude, healthy man experimentation and dynamized medicine) are reinforced by practical experience.
- (ii) Establish the foundations for medical students regarding the homeopathic dynamized capability of generating multiple symptoms (mental, general and physical) in healthy individuals as well as to stimulate a curative response in disorders encountered.
- (iii) Develop disciplines of self observation of the artificial sickening process including description of the symptoms occurring according to their sequence of appearance, type and particularities (symptomatic modalities) in students of homeopathy.

Materials and Methods

The self observation and symptom description method followed the precepts mentioned by Hahnemann (22). The brief homeopathic pathogenetic experimentation was approved by the Ethics Committee for Analysis of Research Projects of the Clinical Hospital of the School of Medicine of the University of São Paulo (23), and

carried out voluntarily for students of the homeopathy discipline. Participants signed an informed consent prior to experimentation. Only students free of chronic diseases and who had not regularly used medication for the last 3 months were eligible. During the self-observation period, disturbances observed in health conditions were kept secret among participants to avoid self-suggested symptoms.

In this teaching proposal, every medicine used had to satisfactorily present the established pathogenesis as described in the HMM. Polycrests were used because they provide a satisfactory degree of symptomatic manifestations mentioned that also permit future comparison. It is of interest, of course, to choose medicines unknown to the students and not studied during the regular course.

Following simple randomization of students into verum and placebo groups (sequence generation method: one-to-one allocation ratio; heads or tails), not disclosed to those involved prior to the end of the study (double-blind), the crossed (sequential) clinical test was applied as study model. Weekly single doses of homeopathic medicine or placebo were experimented by healthy volunteers during an initial period of 4 weeks. Then crossover of the substances was effected (verum \leftrightarrow placebo) for an additional 4 weeks. All participants ingested verum and placebo in a uniform, sequential and randomized manner. Medicines were given in potencies of 30 cH, one dose per week, until manifestation of some new and outstanding symptom was observed after which doses were suspended (24). In case of doubt concerning the symptom observed, the student could repeat the medicine dose schedule up to a maximum of 4 doses. Identity of the medicine in question was not disclosed during the self-observation period of 8 weeks. It was revealed only after final reports of the participant experiences, when the symptoms observed were compared to those described in the previous pathogenetic publication (HMM).

Results

Thirty-three students participated over a period of 3 years

Experimentation of homeopathic medicines took place during the course ‘Foundations of Homeopathy’ after presentation of the ‘Seminars of Homeopathic Materia Medica’ by the students themselves. This specific time was chosen because studying the basic aspects of homeopathic doctrine and familiarization with the types and peculiar characteristics of pathogenetic symptoms of several substances had just taken place. In accordance with Hahnemann (25), symptoms were described in student’s language focusing on several obvious modalities (type, location, sensation, aggravations, ameliorations, concomitants, etc.), mentioning time of appearance after

taking the medicine and duration of each symptom. Symptoms were also identified according to the class of manifestation: (i) common symptom (c.s.)—type, intensity and habitual frequency; (ii) return of previous symptom (r.p.s.); (iii) exacerbation of existing symptom (homeopathic aggravation; agg.); (iv) improvement, or disappearance of existing symptom (secondary or therapeutic effect; curative reaction) and (v) new symptom (n.s.)—type, intensity or uncommon frequency (primary or pathogenetic effect). Due to the difficulty of this task, which demands great accuracy in personal observation, detailed self observation by the students was motivated.

Since the primary purpose of every pathogenesis is to provoke, in the healthy student, the appearance of the primary effects of the homeopathic medicine being studied, most of the *new symptoms* (type, intensity or uncommon frequency) described can be related to this class of manifestations (pathogenetic effect). Fifty students attended this discipline during the period of 2003–2006 and 33 of them volunteered to take part in this brief homeopathic pathogenetic experimentation, in an effort to observe and describe the symptoms according to the proposed homeopathic methodology. Three substances were elected for experimentation: *Arsenicum album* (11 students; 6 women and 5 men; average age of 21.4 years), *Lachesis muta* (9 students; 6 women and 3 men; average age of 21.3 years) and *Sulphur* (13 students; 6 women and 7 men; average age of 21 years).

Description of peculiar symptoms during the verum experimentation

Hahnemann (26) considers and defines the *peculiar or characteristic signs and symptoms* as more striking, singular, uncommon, according to the several modalities or particularities systematized in the Homeopathic Repertory: location, sensation, aggravations, ameliorations, concomitants, etc. These are unlike the *common symptoms* which are more general and undefined such as loss of appetite, headache, debility, restless sleep, discomfort and so forth, that demand but little attention when of that vague and indefinite character. If they cannot be more accurately described, symptoms of such a general nature are observed in almost every disease and from almost every drug. They were also observed in almost every experimenter.

Although many common manifestations appear during the experimentation of the verum and placebo substances, symptoms of a peculiar nature (modalities, intensity or uncommon frequency) appeared mostly during the experimentation of the verum. These caught the students' attention and reinforced the legitimacy of the qualitative method of observation of the *idiosyncratic manifestations*, as opposed to the quantitative analysis of

the common manifestations in the homeopathic pathogenetic experimentation.

In order to minimize selection bias, we only analyzed reports where the student was able to accurately describe (criteria for pathogenetic symptom selection): new pathogenetic symptoms (type, intensity or uncommon frequency) and peculiar and idiosyncratic symptoms only when utilizing the verum, and also only common symptoms when using the placebo. Reports that did not obey both criteria were excluded because the accuracy of the student's perception could not be trusted.

Comparing the described symptoms to the HMM

After the self-observation period during which students ingested doses for 8 weeks, they documented their experiences in a report of changes observed and their experiences during the last module of the course. Descriptions of the peculiar and characteristic symptoms in the experimentation of the verum were compared to those described in the previous pathogenesis of the medicines (HMM). They searched for similarities and analogies that could suggest the reproducibility of the homeopathic method in analyzing the pathogenetic properties of each substance.

As symptoms were described in the language of the students, we chose the Pure and Semi-Pure Homeopathic Materia Medica (27–29), as a reference source to compare symptoms described by the students with those in previous studies. Thereby, we could apply other *Materia Medica* sources and thus allowing other comparisons to the reported symptomatic manifestations (Tables 1–3).

Discussion

Confirming Hahnemann's statement (30), we observed that self experimentation allows the apprentice student of homeopathic foundations to test both the curative principle of similitude and a healthy persons' experimentation of substances in infinitesimal doses in addition to teaching the art of observation, indispensable to any physician. The brief homeopathic pathogenetic experimentation need not follow rigid methodology used to elaborate the classic pathogenesis which would only complicate its inclusion in the curriculum of the homeopathic disciplines taught in medical schools. To facilitate analysis of the method, we prioritized a qualitative analysis of the phenomena, thus evaluating the idiosyncratic manifestations observed by some students. This is fundamental to the process of individualization of homeopathic medicines, and can in turn provide important subsidies to support the specific presuppositions of the homeopathic model.

Table 1. Comparing *Arsenic album* symptoms to those described in *Hahnemann's Materia Medica Pura*

Experimentation of <i>Arsenicum album</i>	
Students' symptoms	Symptoms from Hahnemann's <i>Materia Medica Pura</i>
Student 2:	
'One hour after taking the dose, I felt a strong pressure in the thorax, mainly on the right side, that lasted for 5 min'.	521. Pains in the chest. 522. Much pain in the chest. 526. Tensive pain in the chest, especially when sitting. 527. Stitches in the superior right side of the chest, especially felt when drawing the breath, like pressure, that ends in a stitch.
'After half hour, I felt burning in the breastbone region, lasting a few minutes'.	534. A long-continued burning in the region of the sternum.
'Nausea with intense salivation on the 2nd day'.	285. Nausea, rather in the throat; at the same time water accumulated in the mouth. 300. When sitting, nausea; much water came into the mouth, as in water brash.
Student 7:	
'Vertigo when getting up and while walking, swaying from one side to the other, on the 2nd and 3rd days'.	7. Vertigo; when he rises up, his thoughts go away. 8. Vertigo only when walking, as if he would fall to the right side. 31. While walking in the open air very stupid and giddy in the head, chiefly in the forehead, as if intoxicated, so that he staggered first to one side and then to the other, and feared to fall every instant.
'Headache in twinges at the temple and in the left eye while walking, during the 5th and 6th days'.	50. Aching stupefying headache, with fine stitches on the left temporal region near the outer canthus of the eye when walking and standing, going off when sitting. 51. Stitch-like pain on the left temple, which went off by touching. 63. Tearing shooting in the left temple.
'In the afternoon of the 6th day, an extremely sensitive feeling and sadness with no apparent reason'.	1040. Over-sensitiveness and excessive tenderness of disposition; dejected, sad, lachrymose, is distressed and anxious about the slightest trifle.
'Intense anxiety at night which prevented sleep until 1 A.M., from the 6th to 8th days'.	1010. She cannot fall asleep before midnight on account of anxious heat, for many days. In the evening, after lying down, and at about 3 A.M. (after walking) anxiety. 1020. Anxiety and restlessness in the whole body.
Student 11:	
'On the 1st day, several episodes of unbearable headaches, in twinges, above the right brow, with duration of 1–2 minutes, from 3 P.M. to 7 P.M.'.	46. Aching stupefying headache, especially on the right side of the forehead, just above the right eyebrow, which pains as if sore on wrinkling his forehead. 47. Aching drawing pain on the right side of the forehead.
'Three lymph nodes (ganglions) under the jaw swollen and aching, from the 2nd to 4th days'.	207. Swollen glands under the jaw, with pressive and contusive pain.
'Unusual itching and swelling of the eyes, such as conjunctivitis, which lasted during the whole 3rd day'.	92. Red inflamed eyes. 95. Smarting eroding itching in both eyes, compelling him to rub them. 96. Inflammation of the eyes. 97. Violent inflammation of the eyes. 98. Swollen eyes and lips. 99. Swelling of the eyes. 100. Swollen eye lids.

We searched for analogies and similarities among the new and peculiar symptoms described by students with the verum substance and those mentioned in previous experiments. This was done without permitting these specific differences to invalidate the initial proposal of experiencing the artificial sickening proposed by the pathogenetic experimentation and the therapeutic response resulting from the principle of homeopathic cure and biological activity of dynamized medicine. Comparing the absence of idiosyncratic manifestations in the experimentation of the placebo, all correlations among the characteristic symptoms observed by the students in the verum experimentation and those described in other pathogenetic processes lead to accept that *experimentation in healthy individuals* leads to a

deeper understanding of the healing properties of medicinal substances.

Disappearance of disturbing symptoms after experimentation with any homeopathic medicine strengthens the *therapeutic principle of similitude* frequently mentioned throughout medical history. Either by self experience or by observation of their colleagues, the *properties of dynamized medicines* (ultra dilution without any molecule-gram of the matrix substances) *causing alterations in the experimenters' state of health*, students can overcome the primary obstacle to understanding homeopathic treatment method vis-a-vis the Cartesian paradigm of the relationship dose effect of classical pharmacology. These considerations were evident in the student's replies to a questionnaire that evaluated the

Table 2. Comparing *Lachesis muta* symptoms to those described in *Hering's Guiding Symptoms*

Experimentation of <i>Lachesis muta</i>	
Students' symptoms	Symptoms from <i>Hering's Guiding Symptoms</i>
Student 1:	
'I wanted to speak uncontrollably (during classes and other situations), as noticed by friends and family, during the first three days of the experimentation'.	Most extraordinary loquacity, making speeches in very select phrases, but jumping off to most heterogeneous subject. Loquacity; much rapid talking; wants to talk all the time. Inclination to be communicative; vivid imagination; extremely impatient at tedious and dry things.
'Severe headache at the left temple, pulsing, beginning at 10 A.M. and disappearing after about 2 hours, during the first 4 days'.	Throbbing pain in temple with heat in head. Violent throbbing pain in left temple, particularly before menses. Headache frightfully severe, brain feels as if it would burst skull, especially at temples; generally begins on rising in morning, seldom in afternoon.
Student 4:	
'Heat flushes in the neck rising to the head with red face, during the 2nd and 3rd days'.	Red faces, as in apoplexy; bloated, red, with headache, pains in limbs, stomach, etc. Flushes of heat.

Table 3. Comparing *Sulphur* symptoms to those described in *Hahnemann's Chronic Diseases*

Experimentation of <i>Sulphur</i>	
Students' symptoms	Symptoms from <i>Hahnemann's Chronic Diseases</i>
Student 3:	
'In the first 2 days, I felt a sensation of well-being and peacefulness, together with heat flashes in the head without fever'.	187. Ebullition of blood to the head and frequent flushes of heat. 188. Rush of blood to the head, like a gentle pressure over the head.
'On the 3rd day, I noticed a decrease in the intestinal rhythm, progressing until the 5th day, when I had constipation for two days, returning to normal on the 7th day'.	847. Constipation for two days, then a single stool without colic; it comes on unexpectedly. 850. Stool only every two, three or four days, hard and troublesome.
'On the 7th day I had a sensation of heat through the entire body, the weather was cold and I felt suffocated by my clothes, with no thirst, fever or perspiration; the hot did not disappear'.	1711. Dry heat in the body, every room is too hot for him. 1713. Frequent flying, quickly transient flushes of great heat. 1714. Sensation of heat all over the interior of the body; it burns upward in her chest; but without any thirst; she was to compel herself to drink.
Student 8:	
'During the first 2 days, an intense hunger sensation with easy satiation'.	601. Sensation of hunger in the abdomen, but it feels full quickly from a few morsels. 602. He feels appetite, but as soon as he even sees the food his appetite vanishes, and he feels, as it were, full in the abdomen; when he starts to eat he feels loathing. 603. Excessive hunger and appetite.
'During the 6th and 7th days, in the morning, nausea following by eructation and desire to vomit before breakfast'.	652. Empty eructation, every morning. 675. Nausea every morning. 677. Nausea before meals. 680. Nausea, with eructation, first like mucus, then bitter and scrap. 681. Nausea and inclination to vomit. 682. Inclination to vomit, three mornings in succession. 683. Inclination to vomit, very frequent, even when she has not eaten anything.
'During the first 2 weeks, deep sleep but not restful, with difficulty to get up and sleepiness during the day, falling asleep during classes'.	1772. Long sleep; he has to compel himself to get up in the morning. 1773. He sleeps too much, and is, nevertheless, un-refreshed in the morning. 1774. Not refreshed in the morning through the night's sleep. 1775. Without any inclination of getting up in the morning. 1776. Drowsy till eight o'clock in the morning, with indisposition for work. 1763. Much yawning and drowsiness by day. 1765. Irresistible sleepiness by day, she cannot keep from going to sleep while sitting at her work. 1766. He cannot keep from sleeping for several hours during the day. 1767. Intense sleepiness by day; as soon as he sits down he falls asleep.
Student 12:	
'On the 5th day, a hot feeling on the left side of my body, the hot feeling moved to other parts with heat flushes in the thorax and head, improving due to perspiration on the 6th day'.	187. Ebullition of blood in the head and frequent flushes of heat. 190. Heat in the head, in the morning. 1711. Dry heat in the body, every room is too hot for him. 1713. Frequent flying, quickly transient flushes of great heat.

proposed teaching method, emphasizing the importance of this initiative to strengthen homeopathic foundations.

Conclusions

Homeopathic Medical Education in Brazil: Historical Background

Homeopathy was introduced by the French homeopath Benoit Mure in Brazil in 1840, but was only recognized as a medical specialty in 1980 by the Brazilian Federal Council of Medicine (CFM). Since 1985, it has been available in some out-patient units of public health services by appointment and procedures are reimbursed by public health plans and private health insurance. According to the survey carried out by the Oswaldo Cruz Foundation (Fundação Oswaldo Cruz, 1996) (31), Homeopathy, as a main specialty of medical practice, occupies the 16th biggest group of professionals among the 61 Brazilian medical specialties and accounts for about 15000 practicing physicians.

The traditional formation of the Brazilian homeopathic physician is by a specialization course (graduate or masters degree *latu senso*), with a theoretical–practical program of 1.200 h, taught by the Homeopathic Medical Associations. After concluding the Specialization Course in Homeopathy, the physician seeking the Title of Specialist in Homeopathy must undergo an examination organized by the Brazilian Homeopathic Medical Association (Associação Médica Homeopática Brasileira—AMHB), Brazilian Medical Association (Associação Médica Brasileira—AMB) and by the Federal Council of Medicine (Conselho Federal de Medicina—CFM). Since 2004, Homeopathy is available as a Medical Residency at the Federal University of the Rio de Janeiro State [Universidade Federal do Estado do Rio de Janeiro (UNIRIO), Hospital Universitário Gaffrée e Guinle] with one or two annual vacancies.

Due to the increasing interest, worldwide, of medical students in the learning process of complementary and alternative medicine (CAM), homeopathy is being offered as an elective discipline in some Brazilian Medical Schools, by means of theoretical–practical activities with various schedules. This elective discipline at the School of Medicine of the University of São Paulo (FMUSP) seeks to include the main topics of the undergraduate course curriculum in a condensed program of 75 class hours (32).

Implications of this Brief Pathogenetic Experimentation

With the growing interest and inclusion of homeopathy and other modalities of CAM in medical schools (33–37), innovative techniques of learning should be developed, to facilitate the understanding of the heterodox principles

involved. Brief pathogenetic homeopathic experimentation reveals the empirical fundamentals for the investigative method of curative properties of homeopathic medicines, in addition to exemplifying the principle of homeopathic cure in some symptoms identified.

As a result of this teaching approach, students could corroborate the hypothesis that the *information* contained in the infinitesimal doses of dynamized medicine can produce primary effects in biological systems, a major obstacle to the acceptance of homeopathic standards according to the quantitative thought. We believe that with the verification of subjective aspects (psychic and emotional aspects, dreams, etc.) of human individuality noted in the process of artificial sickening, we are calling the attention of future physicians to the natural sickening dynamics, thus deepening the physician's understanding of the sick individual.

According to Hahnemann's proposal (38), we chose to enhance the appearance of idiosyncratic manifestations (uncommon, singular and characteristic symptoms) because they represent qualitative research of higher hierarchical value in the application of the homeopathic method in lieu of opting for scientific proof of the percentage of symptoms related to the homeopathic medicine experimented. Assuming unpaired value in the validation of the results of the homeopathic pathogenetic experimentation, the *criteria for selection of a pathogenetic effect* are indispensable for the acceptance of the pathogenetic effects of the substance experimented (and not only common symptoms of the experimenter), because they translate the own characteristics or properties of the pathogenetic manifestations observed in the experimentation with dynamized substances.

As described by Riley (39) and Fisher and Dantas (40) Dantas *et al.* (41, 42), many of these were observed in the peculiar symptoms of the verum phase mentioned: (i) occurrence after brief use of the medicine; (ii) intensity of the symptom; (iii) duration of the symptom; (iv) peculiarity or originality of the symptom (idiosyncrasies); (v) strong conviction of the student that the symptom was caused by the medicine; (vi) confrontation with symptoms produced by the placebo; (vii) disappearance of previous or present symptoms during the test (cured symptoms); (viii) incidence of the symptom in more than one volunteer (corroboration in other volunteers); (ix) association of modalities or concomitant symptoms and (x) reappearance of the symptom after the re-experimentation. Illustrating the *criteria for selection or causal attribution of the pathogenetic effects* cited earlier with the peculiar symptoms mentioned by the students, we find high values (scores: 1–4) (41, 42) for the same ones (Table 4).

By using a methodology based on phenomena, we were able to access the students' rationality through the subjective aspects of morbid susceptibility, observing that practical experience is powerful enough to transpose

Table 4. Comparing the described peculiar symptoms with the *criteria for selection of the pathogenetic effect*

	Students	Peculiar symptoms	Criteria	Score
Experimentation of <i>Arsenicum album</i>	Student 2	'One hour after taking the dose, I felt a strong pressure in the thorax, mainly on the right side, that lasted for 5 min'.	i, ii, iii, iv, v, vi	4 (more than four defined criteria)
	Student 7	'Intense anxiety at night which prevented sleep until 1 A.M., from the 6 th to 8 th days'.	i, ii, iii, iv, v, vi, ix	4 (more than four defined criteria)
	Student 11	'On the 1 st day, several episodes of unbearable headaches, in twinges, above the right brow, with duration of 1–2 minutes, from 3 P.M. to 7 P.M.'.	i, ii, iii, iv, v, vi, ix	4 (more than four defined criteria)
Experimentation of <i>Lachesis muta</i>	Student 1	'Severe headache at the left temple, pulsing, beginning at 10 A.M. and disappearing, after about 2 hours, during the first 4 days'.	i, ii, iii, iv, v, vi, ix	4 (more than four defined criteria)
	Student 4	'Heat flushes in the neck rising to the head with red face, during the 2 nd and 3 rd days'.	i, ii, iii, iv, v, vi, ix	4 (more than four defined criteria)
Experimentation of <i>Sulphur</i>	Student 3	'On the 7th day I had a sensation of heat through the entire body, the weather was cold and I felt suffocated by my clothes, with no thirst, fever or perspiration; the hot did not disappear'.	i, ii, iii, iv, v, vi, viii, ix	4 (more than four defined criteria)
	Student 8	'During the 6th and 7th days, in the morning, nausea following by eructation and desire to vomit before breakfast'.	i, iii, iv, v, vi, ix	4 (more than four defined criteria)
	Student 12	'On the 5th day, a hot feeling on the left side of my body, the hot feeling moved to other parts with heat flushes in the thorax and head, improving due to perspiration on the 6th day'.	i, iii, iv, v, vi, viii, ix	4 (more than four defined criteria)

the theoretical barrier of scientific evidence limitation thus counteracting prejudices.

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