

## **The revisitation of an ancient recipe by the personal physician of Empress Maria Theresa of Austria for totally delousing garment and clothes both infested or destined to be infested**

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**Abstract:** Clothes and garment delousing has been for centuries a very important trouble and manifold researches had attempted to loose the problem, employing heat or cold vapours of petroleum derivatives, or camphor or naphthalene. Most recently aromatherapy has shown some quite appreciable results as far as this concern is involved, since all methods forecasting the usage of petroleum derivatives and naphthalene tend to ruin garment and let those become stinky and difficult to be worn by individuals. I have discovered and revisited an ancient recipe by G. van Swieten from Leiden, personal physician of Maria Theresa of Austria. I have obtained very thrilling results that encourage its employ in all kinds of garment for all ages and sexes.

**Keywords:** van Swieten solution, *Pediculus Humanus capitis*, *Pediculus Humanus corporis*, *Pediculus Humanus pubis*, *Melophagus ovinus*.

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### **I. Background**

Lice are an important factor in deciding many wars. It has been said that Napoleon's defeat in his attempt to conquer Russia was due to epidemic typhus or "ship fever", spread among his troupes by body lice and especially by clothes and underwear interchanges.(1)

Since centuries an avalanche of methods have been ideated to destroy lice in clothing.

For instance Vago in 1916 (1) invented a simplest kitchen boiler that emitted steam at 212-230°F for half-hour to delouse soldiers' uniforms and garment.

Rubner (1) proposed another special method based upon the temperature of the skin, that when comfortably clothed, usually ranges between 30° and 32° C and so the air temperature between succeeding layers of clothing falling toward the exterior, being lowest in the outside layer. The nearer the skins the higher the temperature and the drier the air; the air is very dry near the body, and it is more charged with water in the outer layers of clothing in proportion as the air grows cooler.

In 1917 another apparatus was created by Vondranschen (1), that used pressurized air very hot, but even Waldow (1) launched the idea to cover completely garments and clothing underneath very hot sand (110°C) for 2 hours.

Indeed Foster (1) ideated to let garment and clothes to be fully sprayed by cold vapours of carbon tetrachloride.

#### **All this aforesaid belongs to History:**

During World War I, lice infestations on soldiers represented the phantom of the occurrence of typhus and manifold researchers attempted to loose this hazardous concern, inventing and testing all the possible substances available at this epoch onto hair, entire body but especially on uniforms, that were considered the most perilous milieu of transmission for typhus.

It must be considered that petroleum and methane were the first elements to employ for this purpose.

Georg Mayer heralded the "Methaninsanierung" of clothes and fabrics by the simplest usage of hottest steam and methane.(2)

The same A had proposed a mix of essential oils and other reagents and oils to spray upon clothes thanks to hot steam: cresol, dichlorobenzol, anise oil, Eucalyptus oil, Eugenol, Fennel oil, Bergamot oil, chloroform, formalin, sulphuric acid and finally tincture of Calamus aromaticus (3)

Jean Legendre had suggested a mix of naphtalin powder with Lemongrass oil, Pennyroyal mint oil and Eucalyptus oil (4).

All the results seemed to be successful, even Historians of Medicine have forgotten all these studies over time, even if naphtalin has remained fashionable through decades and till yet in many countries.

Ilvento in 1918 demonstrated that hot steam containing Anise oil, Turpentine, camphor and a 5% of solution of phenol exercises a complete and irreversible destruction of lice (*Pediculus Humanus vestimenti*). (1)

After World War II chlorinated derivatives took over all these ancient methods, and all the possible petroleum derivatives occupied the scenario of this concern for several decades, till the discovery (or revival) of aromatherapy in 60-70ies that could arrange a satisfactory clothing delousing.

It is indisputable (thanks to accurate mitochondrial DNA analysis) that *Pediculus humanus corporis* originated 100000 years ago from the *Pediculus capitis* that used to infest animals and cattle and only afterwards transferred to man (and the contrary, i.e. the transfer from man to animal, is hitherto under observation (5), and lice had began to proliferate and become more aggressive, owing to the clothes interchange. (5,6)

It is ascertained too, according to serious experimentations made 100 years ago, that *Pediculus humanus vestimenti* is able to detect the vicinity of certain individuals through its sense of smell.(1) Linnaeus in his *Fauna suecica* (1746) describes an *Acarus ovinus*, which he makes synonymous with *Reduvius Charleton* (1668) and *Pediculus ovinus* (*Historia insectorum* 1710).

In the second edition of *Fauna suecica* (1761) he calls the parasite *Melophagus ovinus*, and correct his initial error, declaring it is not an acarus and indeed declares the parasite belongs to the Family of *Pediculidae*, like *Pediculus humanus capitis, pubis, corporis*.(7)

*Melophagus ovinus* readily transfers from sheep to man, and remains on skin or in clothing for several days. Generally it does not generate discomfort and it is not clear it can bite host. All fleas from poultry can infest man and it is accepted they bite man.(8)

The only difference is that *Pediculus ovinus* belongs to the Order of *Diptera*, meanwhile *Pediculus humanus* belongs to Order of *Neoptera*.

All this preamble to declare that the eradication of *Pediculus ovinus* (*Melophagus ovinus*) from clothes and fabrics foresees (and surely guarantees) that the same procedure can be used to obtain the same elimination of lice and eventual nits of *Pediculus humanus capitis* and *corporis* and *pubis* from whichever cloth as well.

As a matter of fact it is mandatory to discover a remedy apt to delouse clothes without ruining fabric or make them stinking or spoiled and I have examined and scrutinised an huge amount of possibilities to get this chance available.

## II. Materials and methods

I have retrieved an ancient recipe from a Formulary by Gerard van Swieten, the famous personal physician from Leiden (The Netherlands) of the Empress Maria Theresa of Austria, and I revisited it and thus the novel formula is not but a hydroacetic solution including as chief ingredients:

Cochlearia Officinalis Leaf Extract  
Potassium Nitrate  
Ammonia  
Concrete De Verveine.

It is well known that lice cannot tolerate quercetin and rutin from *Cruciferae* (*Cochlearia off.*, *Raphanus niger*), isopropyl thiocyanate from *Brassicaceae* (*Sisymbrium officinale*, i.e. Hedge mustard or *Capsella Bursa Pastoris*) and finally veratrin and cevadic acid from *Liliaceae* (*Sabadilla* and *Veratrum*). (9,10) Anyway, due to the malodour of the tincture of *cochlearia officinalis* and because of the fact it ruins materials and fabric and imparts unpleasant smell to garment, I have replaced this tincture by glycerine extract of Hedge mustard (*Sisymbrium officinale*) at the same dosage of the aforesaid tincture.

I have tried to use lavender instead of verveine, for the first experimentation and I have stated that results do not change.

The way of usage of this garment delousing lotion is not reported in the ancient Formulary so I have had to ideate a novel method of employing it, so that I created a nebulizer with no propellant gases.

I have decided to effectuate two types of experimentations:

- 1) Spraying the product on utterly new clothes that are destined to be worn by people who will enter in contact with lice and nits, because of their job, and thus, these studies do represent the preventive aptitude of the spray to keep off parasites.
- 2) Spraying the product on clothes infested by lice and nits and keeping the fabrics in vacuum bags for 15 hours in order to observe the capacity of delousing of the formula.

In the first case the treated new clothes are worn by people who are always exposed to lice and the count of eventual nits and lice is made after four days from the very first moment the volunteers wore the garment itself.

## III. Results

Here follows Table I where the numbers of lice and nits found in garment after 4 days volunteers wore the clothes, during their job, are recorded:

**Table I:** Number of lice and nits found in the garment after 4 days of wearing by the workers

Case	Number of lice and nits found in the garment after 4 days of wearing by the workers
A	Nil
B	Nil
C	Nil
D	Nil
E	Nil

In the second case I counted the lice and nits distinctly before to spray the product on the clothes and to insert those into the vacuum bags and I counted again the dead lice and nits after 15 hours of treatment. Here follows Table II where the numbers of alive lice and nits before treatment are plotted.

**Table II:** Numbers of alive lice and nits before treatment

Case	Numbers of alive lice and nits before treatment
A	26
B	31
C	11
D	17
E	24

Table III, finally, reports the numbers of alive lice and nits counted in each bag containing 700 g of infested garment, after the treatment with the van Swieten revisited formula (15 hours of treatment in vacuum bags)

**Table III:** numbers of alive lice and nits in each bag after 15 hours of treatment.

Case	Numbers of alive lice and nits after treatment
A	nihil
B	2
C	nihil
D	nihil
E	1

#### IV. Conclusions

It is so well ascertained that the revisited van Swieten's solution against lice and nits on garments is extremely effective.

There are two single Cases, the B and E, where 2 and 1 lice were found alive after the 15 hours treatment: it must be explained that case B and E used to wear briefs, and lice tend to be most resistant when are well wedged in the briefs folds and seams.

The other males, Cases A and D, used to wear boxers.

In this condition spray may adhere mostly to all surfaces of the fabrics and material.

It is important to advise that in every case (treatment for preventive purposes or treatment for delousing the infested garment) it is better to wash clothes in the washing machine at 212°F, after the treatment in vacuum bags and before to wear the new or used clothes.

#### V. Acknowledgments

The product I have ideated has been commercially registered as Lendinout ACT Tende e Tessuti and it is going right now on the market in Europe

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