

Adolf Würth GmbH & Co. KG

Reinhold-Würth-Straße 12-17
D-74653 Künzelsau

Muenster, 30.04.2018

Dermatological report on human Patch Test
Test for primary skin irritation and hypersensitivity of human subjects
after single application

Würth Handreiniger N-Plus (BC)
Rezeptur-Nr.: 100935

Customer: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12-17
D-74653 Künzelsau

Test Panel: 30 panellists of either sex,
without visible skin diseases or known hypersensitivity

**Concentration
of the product:** 1%, 2% and 5% diluted in Aqua dest.

- patch test
- Würth Handreiniger N-Plus (BC)
- Rezeptur-Nr.: 100935

PRINCIPLE AND METHODS

The objective of the study is to detect primary skin irritation potential and/or existing allergic sensitisation to the test substance.

The test substance is applied to the skin of the panellist via an occlusive patch at a suitable concentration.

The patch limits contact of the panellist's skin with the test substance to a local area and exposure is exaggerated due to the occlusive conditions. The skin is checked at 24, 48 and 72 hours.

The occlusion eases the absorption of the suspected topical allergen allowing it to penetrate the stratum corneum to the viable (effector) cells of the skin and thus presenting a local challenge to the immune system.

If the threshold level of sensitivity is reached, a positive reaction could potentially be induced.

A positive reaction to a correctly applied patch provides evidence of primary irritation to the substance tested, but is not necessarily evidence of sensitisation.

Patch testing provokes allergic skin reactions in already sensitised panellists.

PROCEDURES

Prospective panellists receive a complete explanation of study procedures. If they wish to participate and agree to the conditions of the study, panellists sign a written, informed consent and provide a medical history.

20mg/20µl of the test product diluted 1%, 2% and 5% in Aqua dest. is applied to an adhesive plaster (Curatest® F Folien-Testpflaster, Fa. Lohmann & Rauscher GmbH & Co. KG) and affixed to clinically healthy skin on the upper back.

After a 24 hour exposure period, the plaster is removed and the exposed skin is dermatologically assessed and graded. The second and third assessments are performed after 48 and 72 hours respectively.

All assessments are conducted 30 minutes after removal of the test plaster.

Where a positive reaction is observed, but it is unclear whether the observed reaction is due to sensitisation or irritation, subsequent readings can be performed.

All assessments are performed under standard lighting conditions.

The panellists are instructed to keep the test sites dry.

- patch test
- Würth Handreiniger N-Plus (BC)
- Rezeptur-Nr.: 100935

PANELLISTS

The test panel includes 30 adult male and female panellists.

In this test panel there are always panellists with (very) dry, oily, normal and sensitiv skin.

INCLUSION CRITERIA

- Standard design: Panellists aged 18 years and above with healthy skin in the test area
- Extra designs: Special inclusion of age, gender, skin type etc. according to claim of the study

EXCLUSION CRITERIA

- Acute diseases
- Pregnancy and lactation period
- Sensitisation to ingredients of the test plaster
- Severe illnesses
- Application of pharmaceutical products and skin care products with active ingredients until 4 weeks before testing
- Intake of drugs that possibly can interfere with skin reactions (steroids, antiallergics, topical immuno modulator, etc.)
- Extremely tanned skin

- patch test
- Würth Handreiniger N-Plus (BC)
- Rezeptur-Nr.: 100935

RESULTS

Results of patch-testing for the Test substance
 Concentration of the product: diluted 1% in Aqua dest.

No.	Name	Gender	Age	Diagnosis	24 h	48 h	72 h
1.	AbMa	f	42	healthy skin	-	-	-
2.	AlDi	m	37	healthy skin	-	-	-
3.	AnBr	f	69	healthy skin	-	-	-
4.	ArDo	f	36	healthy skin	-	-	-
5.	ArMa	m	41	healthy skin	-	-	-
6.	ArPe	f	65	healthy skin	-	-	-
7.	BoAn	f	39	healthy skin	-	-	-
8.	BoMa	f	61	healthy skin	-	-	-
9.	BüLe	f	27	healthy skin	-	-	-
10.	CzEv	f	37	healthy skin	-	-	-
11.	DeEv	f	49	healthy skin	-	-	-
12.	EnAl	f	33	healthy skin	-	-	-
13.	GeGa	f	62	healthy skin	-	-	-
14.	HeAn	f	44	healthy skin	-	-	-
15.	HöGe	f	37	healthy skin	-	-	-
16.	LeKi	f	22	healthy skin	-	-	-
17.	KoNo	m	58	healthy skin	-	-	-
18.	KoSa	f	56	healthy skin	-	-	-
19.	KoTi	m	29	healthy skin	-	-	-
20.	LiSt	f	33	healthy skin	-	-	-
21.	RaMa	f	23	healthy skin	-	-	-
22.	ScRa	m	54	healthy skin	-	-	-
23.	ScHo	m	49	healthy skin	-	-	-
24.	ScAn	f	38	healthy skin	-	-	-
25.	TeCh	f	52	healthy skin	-	-	-
26.	TeJa	f	25	healthy skin	-	-	-
27.	TeMi	m	52	healthy skin	-	-	-
28.	WeCo	f	29	healthy skin	-	-	-
29.	WeJa	f	27	healthy skin	-	-	-
30.	WoVi	m	22	healthy skin	-	-	-

- patch test
- Würth Handreiniger N-Plus (BC)
- Rezeptur-Nr.: 100935

RESULTS

Results of patch-testing for the Test substance
 Concentration of the product: diluted 2% in Aqua dest.

No.	Name	Gender	Age	Diagnosis	24 h	48 h	72 h
1.	AbMa	f	42	healthy skin	-	-	-
2.	AlDi	m	37	healthy skin	-	-	-
3.	AnBr	f	69	healthy skin	-	-	-
4.	ArDo	f	36	healthy skin	-	-	-
5.	ArMa	m	41	healthy skin	-	-	-
6.	ArPe	f	65	healthy skin	-	-	-
7.	BoAn	f	39	healthy skin	-	-	-
8.	BoMa	f	61	healthy skin	-	-	-
9.	BüLe	f	27	healthy skin	-	-	-
10.	CzEv	f	37	healthy skin	-	-	-
11.	DeEv	f	49	healthy skin	-	-	-
12.	EnAl	f	33	healthy skin	-	-	-
13.	GeGa	f	62	healthy skin	-	-	-
14.	HeAn	f	44	healthy skin	-	-	-
15.	HöGe	f	37	healthy skin	-	-	-
16.	LeKi	f	22	healthy skin	-	-	-
17.	KoNo	m	58	healthy skin	-	-	-
18.	KoSa	f	56	healthy skin	-	-	-
19.	KoTi	m	29	healthy skin	-	-	-
20.	LiSt	f	33	healthy skin	-	-	-
21.	RaMa	f	23	healthy skin	-	-	-
22.	ScRa	m	54	healthy skin	-	-	-
23.	ScHo	m	49	healthy skin	-	-	-
24.	ScAn	f	38	healthy skin	-	-	-
25.	TeCh	f	52	healthy skin	-	-	-
26.	TeJa	f	25	healthy skin	-	-	-
27.	TeMi	m	52	healthy skin	-	-	-
28.	WeCo	f	29	healthy skin	-	-	-
29.	WeJa	f	27	healthy skin	-	-	-
30.	WoVi	m	22	healthy skin	-	-	-

- patch test
- Würth Handreiniger N-Plus (BC)
- Rezeptur-Nr.: 100935

RESULTS

Results of patch-testing for the Test substance
 Concentration of the product: diluted 5% in Aqua dest.

No.	Name	Gender	Age	Diagnosis	24 h	48 h	72 h
1.	AbMa	f	42	healthy skin	-	-	-
2.	AlDi	m	37	healthy skin	-	-	-
3.	AnBr	f	69	healthy skin	-	-	-
4.	ArDo	f	36	healthy skin	-	-	-
5.	ArMa	m	41	healthy skin	-	-	-
6.	ArPe	f	65	healthy skin	-	-	-
7.	BoAn	f	39	healthy skin	-	-	-
8.	BoMa	f	61	healthy skin	-	-	-
9.	BüLe	f	27	healthy skin	-	-	-
10.	CzEv	f	37	healthy skin	-	-	-
11.	DeEv	f	49	healthy skin	-	-	-
12.	EnAl	f	33	healthy skin	-	-	-
13.	GeGa	f	62	healthy skin	-	-	-
14.	HeAn	f	44	healthy skin	-	-	-
15.	HöGe	f	37	healthy skin	-	-	-
16.	LeKi	f	22	healthy skin	-	-	-
17.	KoNo	m	58	healthy skin	-	-	-
18.	KoSa	f	56	healthy skin	-	-	-
19.	KoTi	m	29	healthy skin	-	-	-
20.	LiSt	f	33	healthy skin	-	-	-
21.	RaMa	f	23	healthy skin	-	-	-
22.	ScRa	m	54	healthy skin	-	-	-
23.	ScHo	m	49	healthy skin	-	-	-
24.	ScAn	f	38	healthy skin	-	-	-
25.	TeCh	f	52	healthy skin	-	-	-
26.	TeJa	f	25	healthy skin	-	-	-
27.	TeMi	m	52	healthy skin	-	-	-
28.	WeCo	f	29	healthy skin	-	-	-
29.	WeJa	f	27	healthy skin	-	-	-
30.	WoVi	m	22	healthy skin	-	-	-

- patch test
- Würth Handreiniger N-Plus (BC)
- Rezeptur-Nr.: 100935

RESULTS

Table 2: RESULTS of patch-testing for the CONTROL
Concentration of the product: blanc patch-test

No.	Name	Gender	Age	Diagnosis	24 h	48 h	72 h
1.	AbMa	f	42	healthy skin	-	-	-
2.	AIDi	m	37	healthy skin	-	-	-
3.	AnBr	f	69	healthy skin	-	-	-
4.	ArDo	f	36	healthy skin	-	-	-
5.	ArMa	m	41	healthy skin	-	-	-
6.	ArPe	f	65	healthy skin	-	-	-
7.	BoAn	f	39	healthy skin	-	-	-
8.	BoMa	f	61	healthy skin	-	-	-
9.	BüLe	f	27	healthy skin	-	-	-
10.	CzEv	f	37	healthy skin	-	-	-
11.	DeEv	f	49	healthy skin	-	-	-
12.	EnAl	f	33	healthy skin	-	-	-
13.	GeGa	f	62	healthy skin	-	-	-
14.	HeAn	f	44	healthy skin	-	-	-
15.	HöGe	f	37	healthy skin	-	-	-
16.	LeKi	f	22	healthy skin	-	-	-
17.	KoNo	m	58	healthy skin	-	-	-
18.	KoSa	f	56	healthy skin	-	-	-
19.	KoTi	m	29	healthy skin	-	-	-
20.	LiSt	f	33	healthy skin	-	-	-
21.	RaMa	f	23	healthy skin	-	-	-
22.	ScRa	m	54	healthy skin	-	-	-
23.	ScHo	m	49	healthy skin	-	-	-
24.	ScAn	f	38	healthy skin	-	-	-
25.	TeCh	f	52	healthy skin	-	-	-
26.	TeJa	f	25	healthy skin	-	-	-
27.	TeMi	m	52	healthy skin	-	-	-
28.	WeCo	f	29	healthy skin	-	-	-
29.	WeJa	f	27	healthy skin	-	-	-
30.	WoVi	m	22	healthy skin	-	-	-

- ⋮ patch test
- ⋮ Würth Handreiniger N-Plus (BC)
- ⋮ Rezeptur-Nr.: 100935

INTERPRETATION CRITERIA

The assessment is based on the morphologic changes detailed in the modified guidelines of

ICDRG (Fregert S (1981/2nd edition) Manual of Contact Dermatitis. On behalf of the International Contact Dermatitis Research Group and the North American Contact Dermatitis Group, Munksgaard Publishers, Copenhagen)

Table 3. Grading of the patch test reactions

Symbol	Morphology	meaning
-	No reaction	negative
?	Only erythema, no infiltration	doubtful
+	Erythema, infiltration, possibly discrete papules	simple-positive reaction
++	Erythema, infiltration, papules, vesicles	Double- positive reaction
+++	Erythema, infiltration, papules, confluent vesicles	3-positive reaction
ir	Different changes (soap effect, vesicles, bulla, necrosis)	Irritative
nt		Not tested

GENERAL DERMATOLOGICAL INTERPRETATION CRITERIA:

The discrimination between irritation and allergy is of importance. As a general rule, a positive reaction is said to be „allergic“ if it has been graded as “+” to “+++” up to 72 hours or beyond.

Understanding the dynamics of the reaction may aid the assessment.

Allergic test reactions could persist ("Plateau-type") or even worsen ("Crescendo-type") on the day after the plaster has been removed). A "Decrescendo"-type (decrease of reaction after removal of plaster) on the other hand, indicates irritation.

If delayed reactions only develop 10-14 days after application, ("iatrogenic") sensitisation should be considered.

Irritative and allergic reactions present erythema and could also cause infiltration.

Papules, vesicles and bullae could demonstrate irritation as well as allergy, whereas pustules and necrosis point to severe irritation reactions.

Both reactions could spread beyond the original application site.

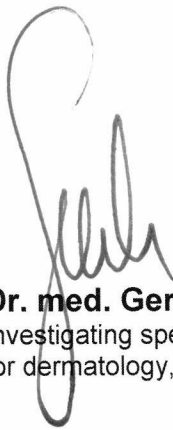
Moreover the individual expression of a reaction lies within a wide range.

- patch test
- Würth Handreiniger N-Plus (BC)
- Rezeptur-Nr.: 100935

CONCLUSION

No evidence of any skin disorder was detected in the test area of any of the 30 panellists after conducting patch testing for 24 h, 48 h and 72 hours according to the internationally recognised guidelines of ICDRG (International Contact Dermatitis Research Group).

It can be concluded that the use of the product will not cause any unwanted skin reactions due to an irritating effect.



Dr. med. Gerrit Schlippe
Investigating specialist
for dermatology, venereology



Literature:

1. Suzuki, J., Environ Dermatol 4-3:202-21-1997
2. ICDRG, Proposal for a revised international standard series of patch tests, Contact Dermatitis, No. 36, 121-123 (1997)
3. U.S. Department of Health and Human Services Food and Drug Administration, April 1999 <http://www.fda.gov/cber/guidelines.htm>
4. Scientific Basis of Patch Testing – S. Iris Ale and Howard I. Maibach, Dermatol. Beruf Umwelt / Occup. Environ. Dermatol. 50, Nr. 2, 43-50 (2002)
5. Scientific Basis of Patch Testing Part II – S. Iris Ale and Howard I. Maibach, Dermatol. Beruf Umwelt / Occup. Environ. Dermatol. 50, Nr. 3, 91-96 (2002)
6. Scientific Basis of Patch Testing Part III – S. Iris Ale and Howard I. Maibach, Dermatol. Beruf Umwelt / Occup. Environ. Dermatol. 50, Nr. 4, 131-133 (2002)
7. Cosmetics & Toiletries magazine, www.CosmeticsandToiletries.com, Vol. 127, No. 5/May 2012, pages 356-360