

ALIEN PROPERTY CUSTODIAN

PREPARATIONS FOR PROTECTION FROM INSECTS

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This invention relates to materials for repelling insects, more particularly it relates to a combination of materials displaying in themselves a certain insect-repelling action with water-soluble alkaline-earth metal salts.

The use of various organic substances especially substances having a strong odor for warding off insects is known. The efficacy of these substances, however, is rather unsatisfactory and in particular does not last long. This disadvantage is, for instance, to be observed with cinnamic alcohol and its derivatives.

In accordance with the present invention such organic substances which already have a certain insect repelling action and more particularly cinnamic alcohol and its derivatives are combined with water-soluble alkaline-earth metal salts whereby the insect-repellent action is remarkably prolonged.

Suitable derivatives of cinnamic alcohol are particularly its esters and ethers having insect repellent properties. Compounds of this kind are by way of example the esters of aliphatic and aromatic carboxylic acids such as cinnamyl acetate-, propionate-, -methoxy acetate-, -isobutyrate and cinnamyl benzoate. Also for instance cinnamyl -ethyl ether or the corresponding methyl ether may be employed.

As water-soluble salts of the alkaline-earth metals, for instance halogenides, rhodanides, nitrates come into consideration. Suitable compounds are for instance strontium bromide, calcium chloride, calcium bromide, magnesium sulfate, magnesium chloride and calcium rhodanide. Of course, only those watersoluble salts of the alkaline-earth metals can be used which are innoxious to the human organism, especially the human skin.

The quantity and nature of the single constituents of our preparations may be varied within wide limits. They are preferably employed in suitable admixture, for instance, with the addition of extending agents, such as solvents or diluents emulsifying, dispersing or thickening agents, so that the preparation may be used in the form of a solution, emulsion, paste or powder. As extending agents the following substances may be mentioned by way of example: ethyl alcohol, aqueous ethyl alcohol, isopropanol, octodecyl alcohol, glycerine, kieselgur, talcum, plaster of Paris, paraffin, woolfat and other ointment bases such as eucerine, petroleum jelly, wax and starch. Further perfuming agents and cosmetic agents may be added.

For commercial reasons we generally prefer

using cinnamic alcohol as the insect repellent constituent of our preparations; as watersoluble alkaline-earth metals salts the halogenides particularly the bromides and chlorides are used. As extender advantageously an aliphatic alcohol such as ethyl alcohol or octodecyl alcohol is present. The total amount of water in our preparations should preferably not substantially exceed 15%.

The invention is further illustrated by the following examples without, however, being restricted thereto, the parts being by weight:—

Example 1

	Parts
15 Coumarin -----	10
Calcium chloride -----	10
96% alcohol -----	80

yield a solution for warding off insects.

Example 2

	Parts
20 Cinnamyl isobutyrate -----	10
Calcium chloride -----	5.45
96% alcohol -----	90

yield a solution for warding off insects.

Example 3

	Parts
25 Cinnamyl propionate -----	10
Calcium chloride -----	5.85
96% alcohol -----	90

yield a solution for warding off insects.

Example 4

	Parts
35 Cinnamyl methoxyacetate -----	2
Calcium chloride -----	1.08
96% alcohol -----	18

yield a solution for warding off insects.

Example 5

	Parts
40 Cinnamyl acetate -----	13.1
Calcium chloride -----	10.0
96% alcohol -----	87.0

yield a solution for warding off insects.

Instead of calcium chloride also for instance calcium bromide, calciumisothiocyanate, calcium nitrate or magnesium chloride or magnesium bromide may be used.

As compared with preparations containing no water-soluble alkaline-earth metal salts preparations of the kind specified exhibit a much more prolonged action in warding off insects. The increased efficacy of these preparations as com-

pared with preparations containing no water-soluble alkaline-earth metal salts in most cases amounts to the two- or three-fold or even much higher value. This surprising increase of the efficacy is most likely due to the formation of double compounds between the organic active compounds and the alkaline-earth metal salts in the preparation.

This increase of the efficacy is illustrated by the following results of comparative tests:—

A preparation consisting of 13.1 parts of cinnamyl acetate and 87 parts of a 96 per cent alcohol displays a sufficient insect repellent action still after one hour. Already after about 2 hours the insect repellent action has disappeared. When using the preparation according to example 5 a sufficient insect repellent action is still observed after 9 hours.

A preparation consisting of 2 parts of cinnamyl methoxyacetate and 18 parts of a 96 per cent

alcohol has lost its insect repellent action after 1 hour. To the contrary the preparation described in example 4 has preserved its full action still after 3 hours and even after 4 hours still displays a pronounced insect repellent action.

The tests were performed by putting an arm covered with the insect repellent preparation to be investigated into a small cage in which 1000-1500 mosquitos were kept. If within 5 minutes no mosquitos stinged the insect repellent action of the preparation was regarded as being sufficient. If within this time more than 5 mosquitos stinged the preparation was considered to be effectless.

This application is a continuation-in-part of our co-pending application Ser. No. 119,364, filed January 6, 1937.

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