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BEBEK PUDRALARINDA ALLERJİK KÜF MANTARI KONTAMİNASYONUNUN İNCELENMESİ

THE INVESTIGATION OF ALLERGIC MOULD CONTAMINANTS ON BABY POWDERS

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SUMMARY

Mycological analyses were carried out on 30 raw talc samples provided by 10 pharmaceutical companies and 50 packed baby powders of 11 companies. Mycological flora of nonpurified raw talc samples were determined. Fourteen types of mould strains were isolated and identified from 30 raw talc samples. From the baby powders which did not have any preservative agents in them, and have been packed under non - hygienic conditions with unsuitable packing cartons and /or paper materials, 49 types of mould strains were isolated and identified. In our study, a total of 403 mold strains were isolated and identified.

Key words : Talc powder, mycologic contamination, mould.

ÖZET

10 ilaç fabrikasında ilaç hammaddesi olarak kullanılan 30 adet ham talk ile 11 firmaya ait 47 adet paketlenmiş bebek pudraları üzerinde mikolojik analizler yapılmıştır. Hiçbir temizleme işlemine tabii tutulmamış ham talkların mikolojik florası tespit edilmiştir. Paketlenmiş örneklerdeki flora ise daha zengindir. İmalat için kullanılacak 30 talk örneğinden 18 cins küf suşunun ayırım ve tanısı yapılmıştır.

İmalatta ürüne hiçbir koruyucunun ilave edilmemiş olması, uygun olmayan koşullarda paketleme, ambalaj materyalinin uygunsuz oluşu nedeniyle bebek pudralarından 49 cins küf suşunun ayırım ve tanısı yapılmıştır. Çalışmamızdan toplam 403 adet küf suşu izole edilmiş ve tanımlaması yapılmıştır.

Anahtar kelimeler : Talk pudrası, mikolojik kirlilik, küf mantarı

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INTRODUCTION

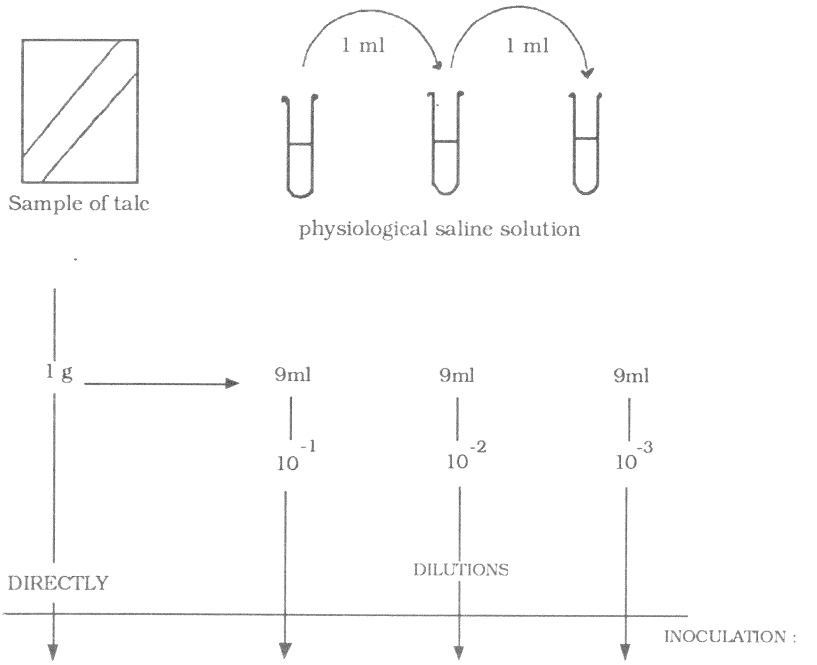
Talc is a natural substance obtained from soil and used frequently in the pharmaceutical industry as an adjunct (1,2). Raw talc naturally contains a variety of microorganism in its flora (1-6). Talc which will be used as adjuncts and baby powders must be used after following a cleaning process otherwise the final products will be contaminated by microorganisms (2-7). Such contaminated products threaten human health when they appear on the market.

MATERIAL AND METHOD

In our study, mycological analyses were carried out on the three series of 30 raw talc samples provided by 10 pharmaceutical companies in Istanbul. In addition, 12 types of 50 packed baby powders provided by 11 companies were also investigated. The samples chosen for analysis contained no chemicals or antibiotics and they are marketed only as cosmetics. Raw talc samples of 250 g were collected in sterile plastic bags. From each series, three packed samples were collected. Mycological analyses were carried out on samples as shown in Fig 1. In our study, malt extract agar medium, modified types of MEA with addition of 40 and 60 g dextrose to 1 L ; Czapek Dox. agar medium (CDA), potato dextrose agar medium (PDA), Czapek yeast agar medium (CYA) and types of these medium with the addition of 0,5 % of ***Rose Bengal*** were used. Media containing ***Rose Bengal*** were used to detect the strains of mould expect the ***Zygomycetes*** class and MAE medium with addition of dextrose were also used to catch the strains of ***Xerophilic*** and ***Xerotolerant*** fungi (8-12).

RESULTS

Totally, 293 mould strains of 49 species from 47 packed baby powders were isolated and identified. There were 246 strains belonging to the ***Deuteromycetes*** class, 27 were in ***Zygomycetes*** and 20 were in ***Ascomycetes*** class. Mould strains which were isolated and identified from baby powders were shown in Table I. Also, 110 mould strains of 14 species were isolated from 30 raw talc samples, 2 of the species belonged to the ***Zygomycetes*** class the others were related to the ***Deuteromycetes*** class. These results are shown in Table II , III and IV.



1) MEA (Malt Extract Agar Medium)
2) MEA + add 40 g sucrose per 1 L of medium
3) MEA + add 60 g sucrose per 1 L of medium
4) Czp. Dox Agar Medium MEDIUM
5) CYA (Czapeks Yeast Agar Medium)
6) PDA (Potato Dextrose Agar Medium)
7) 0,5 % Rose Bengal to MEA, modified MEA medium, Czp. Dox. A., CYA, PDA

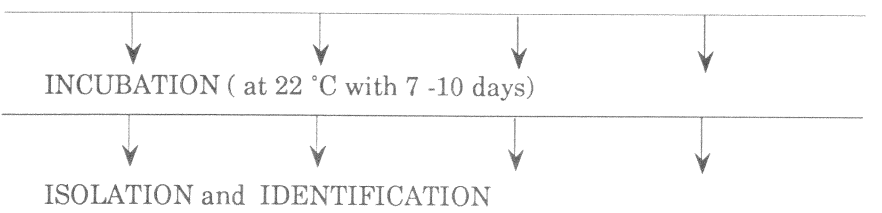


Fig 1. The pathway of mycological analysis for raw talc and baby talc powder samples

Table – 1 : The Deuteromycetes class of mold strains from baby talc powders *

Strains	Number of isolates	Strains	Number of isolates
Acremonium butryri	3	P. chrysogenum	16
Alternaria alternata	12	P. echinulatum	1
Aspergillus candidus	1	P. frequentans	4
A. flavus	8	P. funiculosum	1
A. fumigatus	8	P. griseofulvum	4
A. niger	15	P. jantinellum	1
A. oryzae	4	P. nalgiovense	6
A. parasiticus	5	P. paraherquei	21
A. penicilloides	4	P. rugulosum	3
A. versicolor	11	P. verrucosum var. corymbiferum	8
Bortytis cinerea	1	P. verrucosum var. cyclopium	20
Cladosporium cladosporides	11	P. verrucosum var. melanochlorum	7
C. macrocarpum	3	P. verrucosum	
C. sphaerospermum	4	var. verrucosum	15
Moniliella suaveolens	1	P. variable	2
Paecilomyces variotii	4	Phialophora fastigiata	4
Penicillum brevicompactum	2	Trichoderma viride	11
P. camemberti	2	T. harzianum	4
P. corylophilum	2	Trichotheceum roseum	2
		Ulocladium chartarium	8

Table – 2.: The Ascomycetes class of molds strains from baby talc powders

The Ascomycetes*	
Strains	Number of isolates
Teleomorphic Aspergillus genus	
Aspergillus nidulans	13
The genus Talaromyces	
Talaromyces section Talaromyces	
Talaromyces flavus var. flavus	2
T. helicus var. helicus	7
T. wortmanni	4
Talaromyces section Emersonii	
T. emersonii	1

(*) Ascomycetes class included 20 strains belonging to 5 species.

Table – 3 : The Zygomycetes class of mold strains from baby talc powders*

The Zygomycetes	
Strains	Number of isolates
Rhizopus stolonifer	7
R. oryzae	3
Mucor plumbeus	8
M. racemosus	5
M. hiemalis	4

(*) Zygomycetes class included 27 strains belonging to 5 species.

Table – 4 : Deuteromycetes and Zygomycetes class of mold strains isolated from raw talc samples *

Strains	
The Deuteromycetes	Number of isolates
Penicillium chrysogenum	18
P. nalgiovense	5
P. paraherquei	6
P. verrucosum var. verrucosum	4
P. verrucosum var. corymbiferum	2
Aspergillus flavus	
A. fumigatus	7
A. niger	16
A. versicolor	1
Trichothecium roseum	1
Cladosporium cladosporides	19
Alternaria alternata	10
Subtotal	96
The Zygomycetes	
Mucor plumbeus	6
Rhizopus stolonifer	8
Subtotal	14
Total	110

DISCUSSION

Since many soil - fungi and storage fungi such as ***P. chrysogenum, P. paraherquei, A. flavus, A. niger, A. fumigatus, Cladosporium cladosporides, Alternaria alteranata,*** species were isolated from raw talc samples, they can not used be as adjuncts. There may be great problems by using such kinds of talc (7, 13 -15). The presence of these moulds in preparations when used locally causes infections on the skin and nails. Aspergillus strains cause keratitis and necrosis on the skin (13 -15). ***Rhizopus, mucor, alternaria, cladosporium*** species may cause dermatitis, urticaria and various systemic infections (15). ***P. paraherquei, P. chrysogenum, P. brevicompactum, P. verrucosum, P. echinulatum, A. fumigatus, A. niger, A. nidulans, A. versicolor, A. parasiticus, A. penicilliodies, A. flavus*** and ***cladosporium*** species were isolated from packed baby powder samples. These strains are causative agents of allergic diseases, various lung diseases e. g. septicemic aspergilliosis, aspergillom, pulmonary mycoses etc. because of their conidial forms (7,15). Mould contamination in baby powders for external use may cause allergic diseases, urticaria, asthma, mycoses, necrosis, allergic rhinitis etc. Raw talc used in industry may only be used after a purifying and cleaning process. In addition, baby powders must contain a suitable preservative . The moisture and oxygen from air must not penetrate packing material (16 - 18). In our study all talc samples had been packed in paper bags and had been penetrated by moisture, and therefore contaminated. This process that paper is a wholly unsuitable packing material for raw talc.

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