
The performances of 4 chronic toxicity tests, comprising the Daphnia magna 21-day (d) (crustacean), Brachionus calyciflorus 2-d (rotifer), Pseudokirchneriella subcapitata 72-h (green algae), and the Microtox chronic 22-h (bacteria) tests, were compared. Sixteen chems. with toxicity covering 6 orders of magnitude were studied. Very high correlations were found between the NOEC/EC10 Pseudokirchneriella 72-h, NOEC/EC10 Brachionus 2-d, and the NOEC Daphnia 21-d tests. The toxicol. response of rotifers and microalgae were within the same order of magnitude as the response of Daphnia in 80% of the cases (13/16 chems.). The Microtox chronic test also anticipated the overall results of the Daphnia 21-d test but the prediction was rather imprecise, compared with microalgae and rotifers. The test measuring the algal growth inhibition of P. subcapitata after 72 h was the most sensitive bioassay. Toxicity on microalgae after 72 h could be estd. after 5 h by measuring either the direct fluorescence of either photosynthetic pigments or fluorescein diacetate in 56 and 43% of the cases, resp. The median value of the ratio between EC10 and EC50 was 3.75, 2, and 1.5 with the algae, the rotifers, and the bacteria, resp. (c) 2000 Academic Press.


Surfactants used in household and various industries are rather toxic; therefore, the accumulation of these compds. in the environment through wastewaters has challenged the problem of their biodegrdn. In this research, an attempt was made to assess the toxic effect of various surfactants and the likely products of their biodegrdn. on the acetoclastic methanogens of an anaerobic microbial community. Among the substances investigated, cationic surfactants were found to be most toxic to methanogens: 154 mg/L alkamon DS and 345 mg/L catamin AB induced a 50% inhibition of methanogenesis. Toxicity studies of some arom. and cyclic compds., as the probable products of biodegrdn. of alkylbenzene sulfonate surfactants, showed that methanogenesis in the microbial community under study are rather tolerant to high concns. of these compds.


Possible relationships between surfactant interfacial properties and their environmental effect were studied using several anionic and nonionic surfactants; a linear correlation was obsd. between the parameters, $\Delta$Gad0:Amin and rotifer toxicity. $\Delta$Gad0 is a std. free energy of adsorption at the air/aq. soln. interface; Amin is the minimal hydrated cross-sectional area of the surfactant mol. Both quantities were evaluated from surface tension data. This correlation was much better than attempted correlations of toxicity with the neg. logarithm of the crit. micelle concn. (-log CMC), or with $\Delta$Gad0 or Amin alone. The $\Delta$Gad0/Amin correlation with rotifer toxicity was also better than the correlation with the analogous parameter, $\Delta$s1Gad0/s1Amin, obtained from adsorption isotherms of surfactants on a solid, immobilized membrane simulating a cell membrane. Data supported the hypothesis that toxicity is detd. by both adsorption tendency and ease of cell membrane penetration.

A 7-D toxicity test for marine pollutants using the pacific mysid Mysisopsis intii. 2. Protocol evaluation. Harmon,
The sensitivity of the Pacific coast mysid *Mysidopsis intii* to pollutants was compared in 7-d toxicity tests with that of the Gulf coast mysid *M. bahia* and the Pacific coast mysid *Holmesimysis costata*. Survival and growth responses of *M. intii* to zinc (max. acceptable toxicant concn. (MATC) survival and growth, 152 μg/L) were as sensitive as survival of both *M. bahia* (MATC survival, 152 μg/L) and *H. costata* (MATC survival, 152 μg/L). In contrast, the 7-d test for *M. intii* was less sensitive (MATC growth and survival, 4.99 mg/L) than the test for *H. costata* (MATC survival, 1.99 mg/L) when sodium dodecyl sulfate (SDS) was used as the toxicant. Interlab. evaluation of the 7-d test for *M. intii* exposed to SDS indicated that the test was reliable. The mean test results for the group of participating labs. were not significantly different from those of a group of three inhouse tests, indicating that shipping and handling did not affect mysid sensitivity to SDS. Mysid growth was not as sensitive to SDS as survival in the interlab. tests. Although there were significant differences in median lethal concn. (LC50) values among participating labs., coeffs. of variation of LC50 and MATC survival values among labs. were 10.3 and 37%, resp. These coeffs. were comparable to those reported for interlab. tests with *H. costata*.


The purpose of this study was to develop a short-term (7-d) toxicity test for marine pollutants that is practical to perform at sites remote from a source of test organisms. Lab. culture methods were developed that allowed successful long-term rearing of populations of mysid *Mysidopsis intii*, a species indigenous to the Pacific coast of United States. *Mysidopsis intii* was found to have a short life cycle of 20 d at 20°C, making it useful for chronic toxicity tests. A 7-d toxicity test was developed by comparing the sensitivities of various life stages of *M. intii* to SDS. The most sensitive end point was found to be growth (final body length) of juveniles during the first 7 d after release. The sensitivity of mysids to SDS decreased with increasing age. To allow for shipping newly released juveniles to remote sites, a 7-d test was evaluated starting with 2-d-old mysids. The median lethal concn. for *M. intii* exposed to SDS at ages from 2 to 9 was 4.59 mg/L (95% confidence limits, 4.21-5.00), and the max. acceptable SDS concn. was 4.99 mg/L for both survival and growth.


A lab expt. for school students is described concerning *E. coli* sensitivity to alkylpolyglycoside (APG), soap soln., Na dodecyl sulfate (SDS), dodecylpyridinium chloride (DPC), and H2O2 in agar diffusion tests.


A yeast cell biosysstem was developed for the total toxicity testing of a sample contg. a no. of different pollutants. The method uses an amperometric gas diffusion O sensor as indicating electrode and it is based on the perturbation of the respiratory activity of the immobilized yeast Saccharomyces cerevisiae; glucose is used as the substrate. Several toxic substances were tested: metal ions, phenol and cationic, anionic or nonionic surfactants. Some results of a monitoring program of an industrial wastewater are also reported and discussed.

In this study a total of 28 compds. were tested. The direct treatment of Photobacterium phosphoreum cell suspensions failed to detect toxicity of 15 compds. at a descriptive value of 100 ppm of lower, including the alcs. and antibiotics.


A promising new and rapid toxicity screening test was developed, the concept and principles of which are presented. The method consists of visual observation of in vivo inhibition of an enzymic process, using a fluorescent substrate. Juvenile D. magna was exposed to a toxicant diln. series for 1 h, after which the substrate was added and the enzymic inhibition (absence of fluorescence) was obsd. visually, using a long-wave UV light (385 mm). The 1-h EC50 results of 11 pure compds. are presented and compared to the conventional 24- and 48-h D. magna EC50s. All 1-h fluorescence EC50s were of the same order of magnitude and correlated very well with the 24- and 48-h EC50s. The sensitivity and reproducibility of this cost-effective screening test were compared to those of the Microtox test. The scope for application and the potential of this new rapid toxicity screening test are evaluated.


SDS at 0.1-10.0 mg/L inhibited M. aeruginosa growth within 15 days and depressed chlorophyll a content in a concn.-dependent manner. This concn. range was subtoxic for C. vulgaris whose growth peaked at 0.5 mg SDS/L and chlorophyll a increased with increasing SDS concn. Inferences regarding water pollution by detergents are made.


The effect of levels of salinity and a surface active agent in water on the growth of E. crassipes was detd. The toxicity assocd. with salinity was significant when 30% sea water was added to fresh water and this effect was increased at sodium dodecyl sulfate concns. >50 ppm.


Water-SDS micelle partition coeffs. for tetrachlorobenzenes were measured using a diffusion technique. The results show that the enhanced toxicity and tissue accumulation of the 1,2,4,5-tetrachlorobenzene (I) [95-94-3] is not related to its lipophilicity.

A review with 27 refs. on the toxicokinetics of Na dodecylsulfate [151-21-3].

Effect of sodium dodecylsulfate of polluted water on some physiological processes in the alga Chlorella vulgaris.

Na dodecylsulfate [151-21-3] at 5 × 10^-6-10^-3 g/100 mL stimulated the growth and photosynthesis of the title algae without affecting the respiration. At 10^-2 g/100 mL, the detergent suppressed the growth.


The poisoning of com. anion-selective membranes by sodium dodecyl-sulfate(SDS) was studied. The DS- ions exchange stoichiometrically with the original counterions in the membranes. During this poisoning the vol. of the membranes increases and the water content decreases. Moreover, the membranes show a very strong increase of the resistance and decrease of the permselectivity tending towards 0. Completely poisoned membranes can sorb small quantities of SDS. Because of this, the resistance decreases and the membranes become cation-selective. During electrodialysis of a NaCl soln. contg. 5 × 10^-4 M SDS a "soap layer" is formed at the diluate side in the membranes. The Cl- ions are transported through this layer partly by diffusion of NaCl.

IgE-binding components of staphylococcal enterotoxins in patients with atopic dermatitis. Nissen D; Pedersen L J; Skov P S; Vejlsgaard G L; Poulsen L K; Jarlov J O; Karlmark T; Nolte H Laboratory of Medical Allergology, National University Hospital, Copenhagen, Denmark ANNALS OF ALLERGY, ASTHMA, AND IMMUNOLOGY (1997 Nov), 79(5), 403-8. Journal code: CBM. ISSN:1081-1206. Journal; Article; (JOURNAL ARTICLE) written in English. DN 98059104 PubMed ID 9396971 AN 1998059104 MEDLINE (Copyright 2002 U.S. National Library of Medicine)

BACKGROUND: The exacerbation of atopic dermatitis may be associated with infection of the skin with Staphylococcus aureus (S.aureus). S. aureus isolated from the skin of patients with atopic dermatitis secretes enterotoxin A, B, and toxic shock syndrome toxin 1. This is of interest because these patients may develop specific IgE antibodies against components from staphylococci. OBJECTIVE: The objective was to demonstrate IgE-sensitization to components of Staphylococcus aureus enterotoxins A and B (purified and partially purified), toxic shock syndrome toxin 1, and the bacterial cell component lipoteichoic acid, in patients with atopic dermatitis. METHODS: Blood samples from 34 patients with atopic dermatitis and 10 controls were tested by leucocyte histamine release to the enterotoxins and lipoteichoic acid. The toxins were separated by sodium dodecylsulfate polyacrylamide gel electrophoresis and analyzed by IgE-immunoblotting with sera from the same patients. RESULTS: The majority of patients (96%) with clinical signs of skin infection produced specific IgE-antibodies to all three toxins. Nearly half of the patients produced IgE to enterotoxin A and B. Only 63% of the patients with atopic dermatitis showed cellular response judged by the release of histamine from patient basophils when challenged
in vitro with the toxins. This may indicate clinically unimportant sensitization in a number of patients. The immunoblotting revealed that the major allergens of the toxins were 24 and 28 kD proteins. Partially purified toxins showed a higher frequency of leukocyte histamine release responses than purified toxin. The only obvious difference was a difference in the content of pure toxin of the two preparations. Lipoteichoic acid showed nonspecific activity. CONCLUSION: These findings suggest that staphylococcal enterotoxins may act as specific allergens and induce IgE-antibodies to enterotoxins that may exacerbate the skin inflammation in some patients with atopic dermatitis.

Studies of the ligand binding to cholera toxin, I. The lipophilic moiety of sialoglycolipids. Wiegandt H; Ziegler W; Staerk J; Kranz T; Ronneberger H J; Zilg H; Karlsson K A; Samuelsson B E HOPPE-SEYLER'S ZEITSCHRIFT FUR PHYSIOLOGISCHE CHEMIE (1976 Nov), 357(11), 1637-46. Journal code: GB3. ISSN:0018-4888. Journal; Article; (JOURNAL ARTICLE) written in English. DN 77070272 PubMed ID 1002130 AN 77070272 MEDLINE (Copyright 2002 U.S. National Library of Medicine)
The fixation of cholera toxin by ganglioside GGTet1 is dependent on the nature of the carbohydrate as well as the lipid moiety of the glycolipid. The role of the lipid in binding to the toxin investigated with synthetic ganglioside analogues (gangliosidoides). The interaction between glycolipid and toxin was followed by precipitate formation, by inhibition of toxicity and in polyacrylamide gel electrophoresis. For specific precipitation, an aliphatic hydrocarbon chain at least 14 C-atoms in length is required. Some of the gangliosidoides form high molecular weight complexes with cholera toxin at lower molar ratios of ligand to protein than the natural compound. None of the synthetic gangliosidoides equalled natural ganglioside in its ability to inhibit the effects of the toxin in vivo, but some did show considerable inhibitory activity in monosialo-gangliotetraose or corresponding sialo-glycolipids prevents the easy degradation of the B-protein of cholera toxin into protein subunits by sodium dodecylsulfate.