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2-(4-AROYLAMINOPHENYL)-5,7-DIHYDROXY-2H-v-TRIAZOLO [d] PYRIMIDINES AND PREPARATION THEREOF

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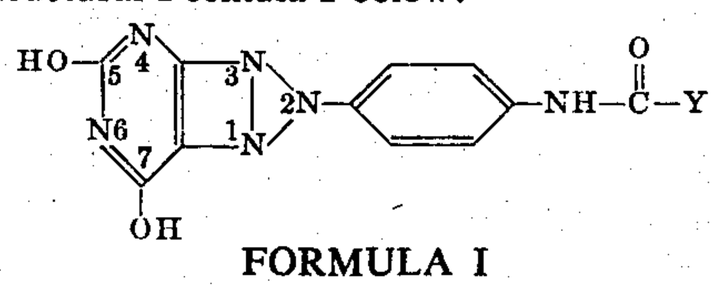
23 Claims. (Cl. 252—152)

This invention relates to new organic compounds of the triazolo[d]pyrimidine series. More particularly the invention relates to certain novel 2-(4-aroylaminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidines, to the preparation thereof, and to detergent compositions comprising said compounds.

It is an object of this invention to provide new fluorescent compounds of particular value as optical whitening and brightening agents of relatively high light stability which are especially adapted to use in detergent compositions for whitening and brightening natural and synthetic fibrous materials.

The new 2-(4-aroylaminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidines of my invention can be represented by structural Formula I below:



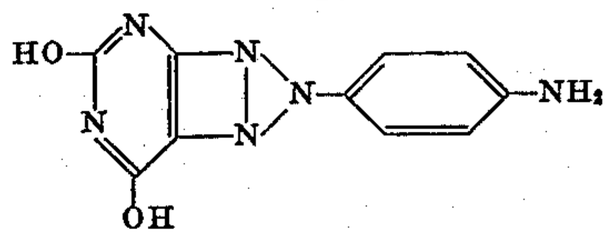
FORMULA I

where Y represents a carbocyclic aryl radical of the class consisting of phenyl, p-biphenylyl, p-stilbyl, naphthyl, p-acetylaminophenyl, p-benzoylaminophenyl, and mono-lower alkoxynaphthyl radicals wherein lower alkoxy contains 1–2 carbon atoms, and phenyl radicals substituted by 1–2 members of the group consisting of lower alkyl, lower alkoxy, and halo. In these latter phenyl radicals, it is preferred that at least one of the two positions ortho to the carbonyl group is unsubstituted.

In the definition of the radical Y, the term lower alkyl is used herein to indicate alkyl radicals having 1–3 carbon atoms, the term lower alkoxy indicates alkoxy radicals having 1–2 carbon atoms, and the term halo indicates fluoro, chloro, and bromo. In addition to the hydrocarbon radicals, viz. phenyl, 1-naphthyl, 2-naphthyl, p-biphenyl, and p-stilbyl radicals, represented by Y, further illustrative examples include: mono-lower alkoxyphenyl radicals such as p-methoxyphenyl, o-ethoxyphenyl, m-methoxyphenyl, and p-ethoxyphenyl; di-lower alkoxyphenyl radicals such as 2,4-dimethoxyphenyl, 3,4-diethoxyphenyl, 3-methoxy-5-ethoxyphenyl, and 3-methoxy-4-ethoxyphenyl; mono-lower alkylphenyl radicals such as p-tolyl, m-tolyl, o-tolyl, p-ethylphenyl, and p-isopropylphenyl; di-lower alkylphenyl such as 2,4-dimethylphenyl, 3,5-diethylphenyl, and 3-methyl-4-propylphenyl; monohalophenyl such as p-chlorophenyl, m-bromophenyl, and o-fluorophenyl; dihalophenyl radicals such as 2,4-dichlorophenyl and 2-chloro-5-bromophenyl; mono-lower alkoxy-mono-halophenyl radicals such as 4-methoxy-3-chlorophenyl and 4-ethoxy-2-bromophenyl; mono-lower alkyl-mono-lower alkoxyphenyl radicals such as 2-methyl-4-methoxyphenyl; mono-lower alkyl-halophenyl radicals such as 2-methyl-4-bromophenyl; 1-lower alkoxynaphthyl radicals such as 1-methoxy-2-naphthyl, and 1-ethoxy-6-naphthyl (alternatively designated 5-ethoxy-2-naphthyl); and 2-lower alkoxynaphthyl radicals such as 2-methoxy-3-naphthyl, 2-methoxy-1-naphthyl, and 2-ethoxy-7-naphthyl (alternatively designated 7-ethoxy-2-naphthyl).

Generally speaking, my new compounds are white solids which melt at high temperatures with decomposition. They are practically insoluble in water, acetone, ethyl formate, aliphatic alcohols such as methanol, ethanol, and diethyleneglycol, and glacial acetic acid; and slightly soluble in dimethylformamide, dimethyl sulfoxide, and mixtures of diethyleneglycol, polyethyleneglycol, or 2-methoxyethanol and an alkali metal hydroxide. The compounds are weakly acidic, and their solubility in any given solvent is generally increased when a base is present. Thus, for example, solutions of the compounds are conveniently prepared by suspending them in diethyleneglycol, adding 50% aqueous alkali, and heating. In dilute solution, my new compounds fluoresce blue-white in daylight and under ultraviolet light and, from such solution, they are substantive to a wide variety of natural and synthetic fibers, sheets, films, and the like, as for example of cotton, cellulose acetate, and nylon.

The new compounds (Formula I) of this invention can be obtained conveniently by introducing an aroyl radical having the formula Y—CO—, i.e. the carboxylic acyl radical of an aromatic monocarboxylic acid Y—COOH, into the primary amino group of 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]- pyrimidine,



FORMULA II

In carrying out this acylation process, I ordinarily prefer to employ an aroyl halide, Y—CO—halogen, especially an aroyl chloride Y—CO—Cl, to N-aroylate 2-(4-aminophenyl) - 5,7 - dihydroxy - 2H - v - triazolo[d]pyrimidine in the presence of an acid-accepting reaction medium to absorb the hydrogen halide formed in the reaction. For best results, I interact 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine and the appropriate aroyl chloride Y—CO—Cl in the presence of an anhydrous tertiary amine such as pyridine at a temperature in the approximate range 30–100° C. The desired N-aroyl product, having Formula I, precipitates from the reaction mixture as a white or near-white solid which is readily isolated, for example by filtration. If desired, the acid chloride is formed in situ, for example by interaction of the aromatic acid Y—COOH, an acid halogenating agent such as phosphorus oxychloride, phosphorus trichloride, or thionyl chloride, and an anhydrous tertiary amine in the presence of the amine reactant (Formula II).

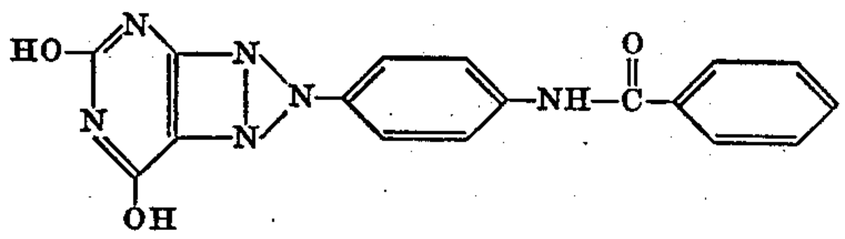
The 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine used as a starting material in the process of my invention is a known compound which is readily prepared. For example, it can be obtained by interacting benzenediazonium chloride with 4-amino-2,6-dihydroxypyrimidine, oxidizing the reaction product to obtain 2-phenyl-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine, nitrating to produce the 4-nitrophenyl compound, and then reducing. Alternatively, and preferably, it is produced by coupling diazotized p-nitroaniline with 4-amino-2,6-dihydroxypyrimidine, oxidizing, and then reducing. Solutions of the starting amine, 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine, are fluorescent but such solutions produce a yellow-brown cast on textile fabrics and this compound therefore has no practical value as a whitening and brightening agent.

The invention is illustrated by the following examples without, however, being limited thereto.

Example 1

A mixture of 2.45 g. of 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d] pyrimidine and 135 ml. of pyri-

dine was heated to 100° C. in a 250 ml. flask fitted with an agitator, condenser, and thermometer. The resulting cloudy solution was filtered to clarify it. The filtrate was returned to the reaction flask and was cooled to 28° C., and there was then added 2.82 g. of benzoyl chloride dropwise during a period of one minute. During this addition, the temperature of the reaction mixture rose to 36° C. The reaction mixture was then heated at 75° C. for one hour and was then cooled to room temperature and filtered to collect the solid white product which formed. The collected solid was washed successively with acetone and with water and was then dried in a vacuum oven at about 50° C. There was thus obtained 3.12 g. of 2-(4-benzoylaminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine (Formula I: Y=C_6H_5—CO—), having the structural formula:

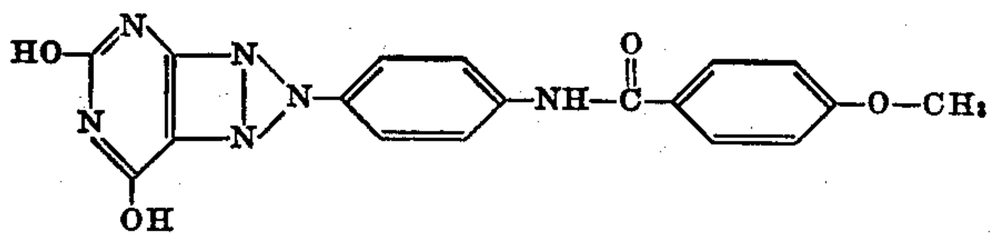


Example 2

4.9 g. of 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine was dissolved in 270 ml. of pyridine and to this solution at room temperature there was added dropwise with stirring 6.8 g. of p-methoxybenzoyl chloride. The reaction mixture was heated at 75° C. for one hour, and was then cooled to room temperature and filtered to collect the white solid which had formed. The solid was washed successively with acetone and with water and then dried in a vacuum oven at about 50° C. The white product thus obtained, which weighed 7.0 g., was 2-[4-(p-methoxybenzoylamino)phenyl]-5,7-dihydroxy - 2H-v-triazolo[d]pyrimidine

(Formula I: Y=p-CH_3O—C_6H_4—CO)

having the structural formula:

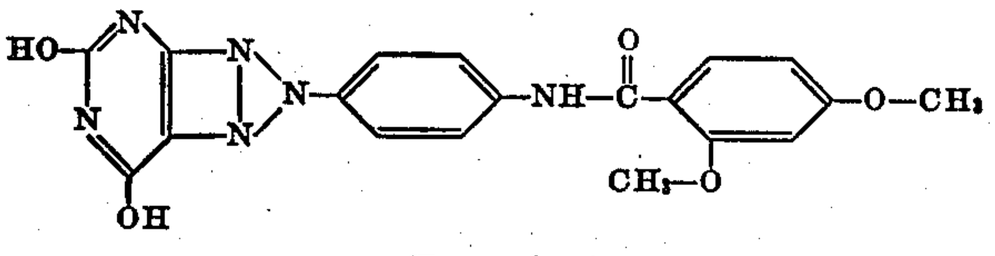


Example 3

Following the manipulative procedure described in Example 2 but substituting 8.0 g. of 2,4-dimethoxybenzoyl chloride for the p-methoxybenzoyl chloride, there was obtained, as a white solid which weighed 7.0 g., 2-[4-(2,4-dimethoxybenzoylamino)phenyl] - 5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=2,4-di-(CH_3O)—C_6H_3—CO—)

having the structural formula:



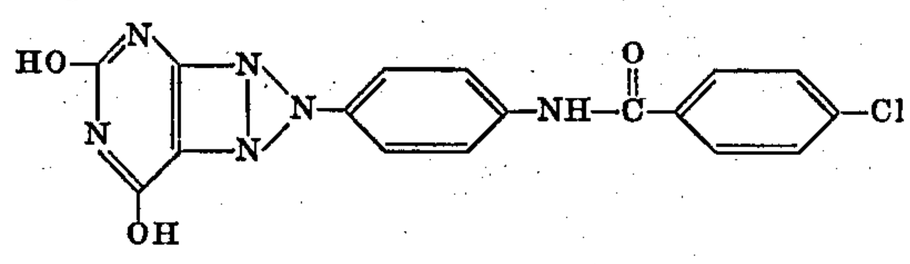
Example 4

9.75 g. of 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine was dissolved in 250 ml. of pyridine at 95° C. The solution was cooled to 30° C. and there was then added dropwise 14.0 g. of p-chlorobenzoyl chloride. During this addition the temperature of the mixture rose to 38° C. and a solid product precipitated from solution. The reaction mixture was heated at 75° C. for one hour, and was then heated to 100° C. and cooled immediately thereafter to 15° C. The reaction mixture was filtered and the solid thus collected was washed successively with acetone, ethanol, and water. The solid was slurried in hot water and filtered and the product thus

collected was dried in a vacuum oven at about 50° C. There was thus obtained, as a white solid which weighed 15.3 g., 2-[4-(p-chlorobenzoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=p-Cl—C_6H_4—CO—)

having the structural formula:

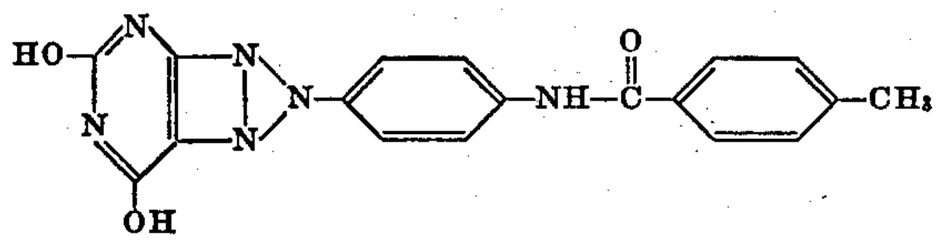


Example 5

24.4 g. of 2-(4-aminophenyl)5,7-dihydroxy-2H-v-triazolo[d]pyrimidine was dissolved in 710 ml. of pyridine at 85° C. The resulting cloudy solution was filtered at 45° C. and to the filtrate, after cooling it to 40° C., there was added dropwise 30.8 g. of p-toluyl chloride. During this addition the temperature of the mixture rose to 50° C. and a tan colored solid precipitated from solution. The reaction mixture was heated at 75° C. for one hour, and was then heated to 100° C. and cooled immediately thereafter to 15° C. The mixture was filtered and the solid thus collected was washed successively with acetone and with water. The solid was slurried in water. The slurry was filtered, and the solid thus collected was dried in a vacuum oven at about 50° C. The product thus obtained, which weighed 30.0 g., was 2-[4-(p-toluylamino)-phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

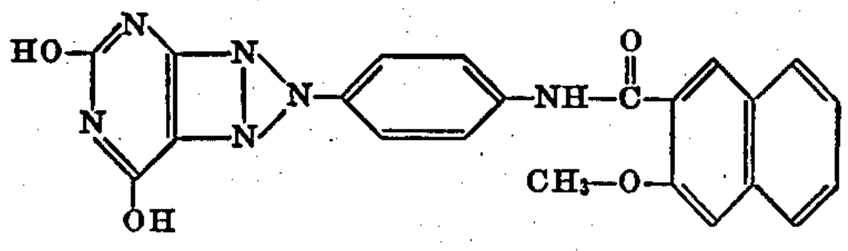
(Formula I: Y=p-CH_3—C_6H_4—CO—)

having the structural formula:



Example 6

4.9 g. of 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine was dissolved in 250 ml. of pyridine at 70° C. The resulting solution was cooled to 25° C. and filtered to remove a small amount of insoluble material, and there was then added dropwise at 25° C. a mixture of 16.8 ml. of chlorobenzene and 6.6 g. of 3-methoxy-2-naphthoyl chloride. The reaction mixture was then heated at 75° C. for one and one-half hours, after which period the mixture was cooled to 15° C. and filtered. The solid thus collected was washed successively with acetone and with water and then dried in a vacuum oven at about 60° C. There was thus obtained 7.5 g. of nearly white powder. This product was 2-[4-(3-methoxy-2-naphthoylamino)phenyl] - 5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine (Formula I: Y=3-CH_3O-2-$C_{10}H_6$—CO—) having the structural formula:



The following additional specific examples of the compounds of my invention are readily obtained when 2-(4-aminophenyl) - 5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine is N-aroylated in accordance with the manipulative procedures described hereinabove, using the indicated aroylating agent:

(*a*) 2-[4-(p-biphenylcarbonylamino)phenyl] - 5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=p-$C_6H_5C_6H_4$—)

using p-biphenylcarbonyl chloride.

(*b*) 2-[4-(p-stilbylcarbonylamino)phenyl] - 5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=p-(C_6H_5—CH=CH—)C_6H_4—)

using p-stilbylcarbonyl chloride.

(*c*) 2-[4 - (p-acetylaminobenzoylamino)phenyl] - 5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=p-CH_3CONH—C_6H_4—)

using p-acetylaminobenzoyl chloride.

(*d*) 2-[4-(p-benzoylaminobenzoylamino)phenyl] - 5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=p-$C_6H_5CONHC_6H_4$—)

using p-benzoylaminobenzoyl chloride.

(*e*) 2-[4-(3 - methoxy-4-ethoxybenzoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=3-CH_3O-4-C_2H_5O—C_6H_3—)

using 3-methoxy-4-ethoxybenzoyl chloride.

(*f*) 2-[4-(2-chloro - 5 - bromobenzoylamino) phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=2-Cl-5-Br—C_6H_3—)

using 2-chloro-5-bromobenzoyl chloride.

(*g*) 2-[4-(3 - chloro-4-methoxybenzoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=3-Cl-4-CH_3O—C_6H_3—)

using 3-chloro-4-methoxybenzoyl chloride.

(*h*) 2-[4-(2-methyl - 4 - fluorobenzoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=2-CH_3-4-F—C_6H_3—)

using 2-methyl-4-fluorobenzoyl chloride.

(*i*) 2-[4-(1-naphthoylamino)phenyl] - 5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine (Formula I: Y=1-$C_{10}H_7$—), using 1-naphthoyl chloride.

(*j*) 2-[4-(7 - ethoxy-2-naphthoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine

(Formula I: Y=7-C_2H_5O-2-$C_{10}H_6$—)

using 7-ethoxy-2-naphthoyl chloride.

When the new 2-(4-aroylaminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidines of my invention prepared as described in the foregoing examples were dissolved or dispersed in aqueous media, the product in each instance fluoresced blue-white under ultraviolet light and showed a wide range of absorption in the ultraviolet region. The product was dissolved in a suitable solvent, for instance a mixture of polyethylene glycol of average molecular weight about 200 and alkaline 2-methoxyethanol, or was dispersed in an anionic or non-ionic detergent. The resultant fluorescent dispersions or solutions were used to dye white and colored natural and synthetic fibers, and were found to be substantive even from low concentrations, e.g. as low as 0.0002%, in these aqueous media to white and colored fabrics of cotton, cellulose, acetate, nylon, viscose, rayon, Orlon, and silk, thereby imparting a blue-white hue to the white fabrics and brightening the colored fabrics. By exposure of the fabrics so treated to light in accelerated exposure tests in comparison with known whitening and brightening agents, it was found that the products of my invention had relatively high stability to light. In washing tests, my new compounds were found to be especially useful as whitening and brightening agents to be used in conjunction with the laundering of white and colored fabrics.

A preferred mode of using and marketing the compounds of my invention is by incorporating them into solid or liquid detergents in an appropriate concentration, for example 0.02 to 0.5% of the whitening and brightening agent by weight. The detergents which are employed are preferably water-soluble synthetic organic anionic and non-ionic detergents; these are of course well-known classes of substances (for example, see McCutcheon's "Synthetic Detergents," McNair-Dorland Company, New York, 1950, pages 120–174). Thus, for example there can be used ordinary soaps, i.e. alkali metal salts of higher saturated and unsaturated fatty acids, organic sulfates and sulfonates, for instance sodium lauryl sulfate and sodium (higher alkyl)-benzenesulfonates, and polyethyleneglycol tert-dodecyl thioether (Nonic 218—Sharples Chemical Co.) These detergents are of course frequently available in admixture with each other or inorganic detergents and builders such as tetra-sodium pyrophosphate, sodium tripolyphosphate, sodium metasilicate, sodium borate, and sodium perborate, and these mixtures can also be employed in utilizing my invention. Other methods of incorporation which will be readily apparent to those skilled in the art can be employed if desired.

(A) A mixture of 2-[2,4-(dimethoxybenzoylamino) phenyl]-5,7-dihydroxy - 2H - v-triazolo[d]pyrimidine and nonylphenoxypolyethoxyethyleneethanol sp. gr. 1.055–1.065 (Igepal CO 630—Antara Chemicals) was ground together using a mortar and pestle to form a 20% dispersion of the whitening and brightening agent in the non-ionic detergent. A weighed portion of this dispersion was added to a hot (70° C.) pasty mixture of equal parts of water and a white anionic detergent consisting of 21.8% of a mixture of sodium lauryl sulfate and sodium dodecylbenzenesulfonates, 18.2% of sodium sulfate, and 60% of sodium triphosphate; the weight of the dispersion used was 0.125% of the anionic detergent weight, so that the concentration of the 2-[4-(2,4-dimethoxybenzoylamino)phenyl]5,7 - dihydroxy - 2H-v-triazolo[d]pyrimidine in the final mixture was 0.025%. For use in treating white fabrics, 2 g. of this mixture (containing 0.0005 g. of the whitening and brightening agent) was dissolved in two liters of water at 60° C. When the resulting solution was employed to launder white fabrics of cotton, cellulose acetate, and nylon, the fabrics were in each instance made much whiter and brighter than similar white fabrics laundered with a control detergent mixture which contained no whitening and brightening agent.

(B) 0.1 g. of 2-[4-(p-methoxybenzoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine was added to 3 ml. of polyethylene glycol, average molecular weight 190–210 (Carbowax 200—Carbide Chemicals Corp.) and to this mixture were added 0.1 ml. of 50% aqueous potassium hydroxide solution and 3 ml. of 2-methoxyethanol. The resulting mixture was warmed, thereby producing a clear solution. This solution was diluted with an aqueous solution containing 0.4% of the white anionic detergent described above in part A to produce a composition containing 0.0025% by weight of 2-[4-(p-methoxybenzoylamino)phenyl]-5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine. When this composition was used to launder white and colored fabrics of cotton, cellulose acetate, and nylon, it produced in each case a whitening effect on the white fabrics, and a brightening effect on the colored fabrics which was much greater than the effects produced by a control detergent solution containing no whitening and brightening agent.

(C) A 20% dispersion of 2-[4-(2,4-dimethoxybenzoylamino)phenyl]-5,7-dihydroxy - 2H - v-triazolo[d]pyrimidine in nonylphenoxypolyethyleneethanol, sp. gr. 1.055–1.065 (Igepal CO 630) was mixed with a hot (70° C.) detergent paste consisting of equal parts of water and the white anionic detergent described above in part A, in the weight ratio of one part of the dispersion per ten parts of detergent paste. The resulting mixture was dried on an oil bath at 110° C. and the product thus obtained was mixed with a further portion of the detergent paste to produce a composition containing 0.025% by weight of 2-[4-(2,4-dimethoxybenzoylamino)phenyl]-5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine. This composition was diluted with detergent solution and used to whiten and brighten fabrics of cotton, cellulose acetate, and nylon in the same manner as the similar composition described

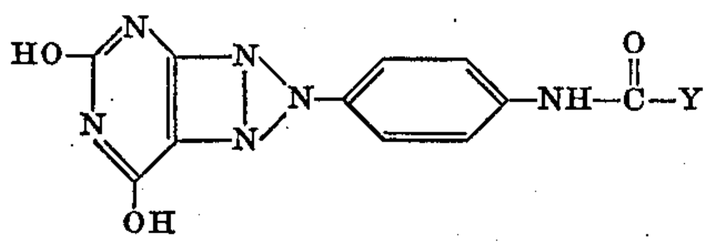
in part A; the fabrics were in each instance whitened and brightened by this procedure much more than similar fabrics washed with the same detergent without a whitening and brightening agent.

(D) A mixture of 0.1 g. of 2-(4-benzoylaminophenyl)-5-7-dihydroxy-2H-v-triazolo[d]pyrimidine, 0.7 g. of diethyleneglycol and 0.2 g. of 45% aqueous solution of potassium hydroxide was heated to form a clear yellow solution. 0.25 g. of this solution was diluted with a 0.2% aqueous solution of a white soap (sodium salts of the C_{12}–C_{18} fatty acids derived from tallow) to produce a composition containing 0.0025% by weight of the whitening and brightening agents. This composition was useful to launder effectively and whiten and brighten advantageously cotton, nylon, and cellulose acetate fabrics.

(E) Using the same proportions by weight as employed in part D above, but substituting 2-[4-(p-chlorobenzoylamino)phenyl] - 5,7 - dihydroxy-2H-v-triazolo[d] pyrimidine for /the whitening and brightening agent there used and substituting a 0.4% aqueous solution of polyethyleneglycol tert-dodecyl thioether (Nonic 218) for the soap solution, there was obtained a composition containing 0.0025% by weight of the whitening and brightening agent. This composition was useful to launder effectively and whiten and brighten advantageously cotton, nylon, and cellulose acetate fabrics.

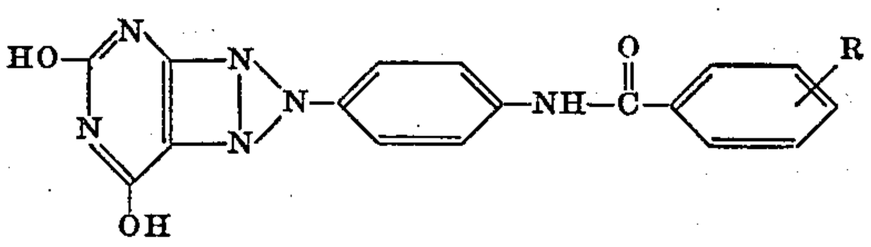
I claim:

1. A 2-(4-aroylaminophenyl)-5,7-dihydroxy - 2H-v-triazolo[d]pyrimidine having the structural formula:



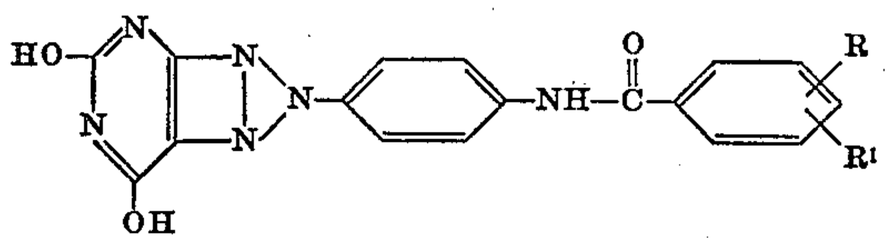
where Y is a carbocyclic aryl radical of the class consisting of phenyl-p-biphenylyl, p-stilbyl, naphthyl, p-acetylaminophenyl, p-benzoylaminophenyl, and mono-lower alkoxynaphthyl wherein lower alkoxy contains 1-2 carbon atoms, and phenyl substituted by 1-2 members of the group consisting of lower alkyl having 1-3 carbon atoms, lower alkoxy having 1-2 carbon atoms, and halogen.

2. A 2-[4-(lower alkoxybenzoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine having the structural formula:



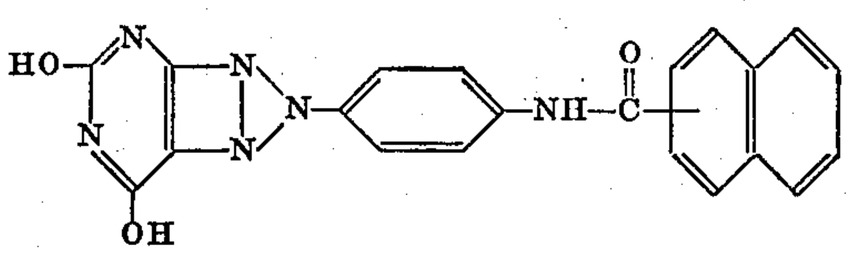
where R is lower alkoxy having 1-2 carbon atoms.

3. A 2-{4-[(di-lower alkoxy)benzoylamino]phenyl}-5,7-dihydroxy - 2H-v-triazolo[d]pyrimidine having the structural formula:

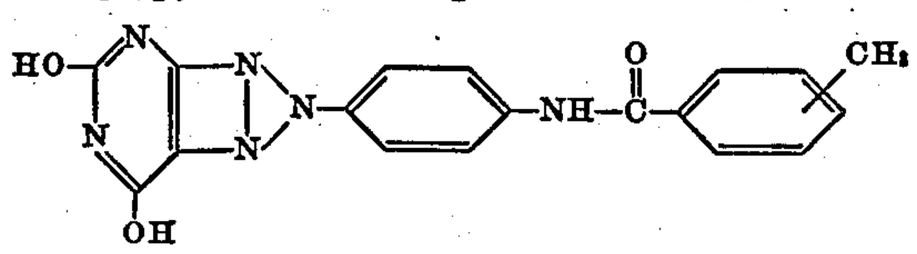


where R and R^1 are lower alkoxy having 1–2 carbon atoms each.

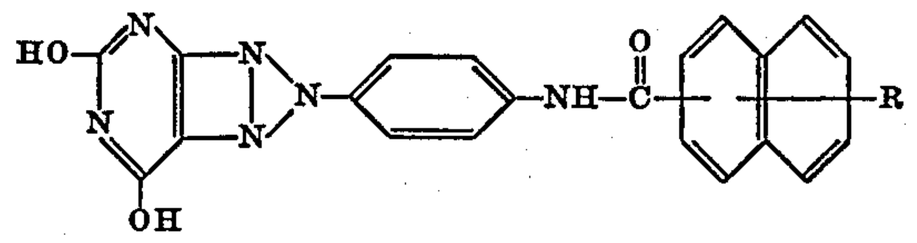
4. A 2-[4-(naphthoylamino)phenyl] - 5,7-dihydroxy-2H-v-triazolo[d]pyrimidine having the structural formula



5. A 2-[4-(toluylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine having the structural formula



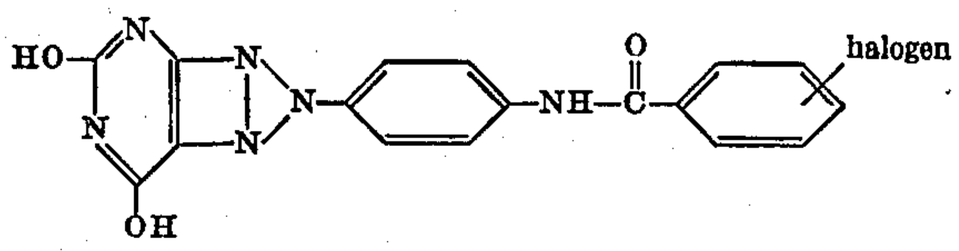
6. A 2-[4-(lower alkoxynaphthoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine having the structural formula:



where R is lower alkoxy having 1-2 carbon atoms.

7. 2 - (p-benzoylaminophenyl) - 5,7-dihydroxy-2H-v-triazolo[d]pyrimidine.

8. A 2-[4-monohalo(benzoylamino)phenyl]-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine having the structural formula:



9. 2 - [4-(p-methoxybenzoylamino)phenyl] - 5,7-dihydroxy-2H-v-triazolo[d]pyrimidine.

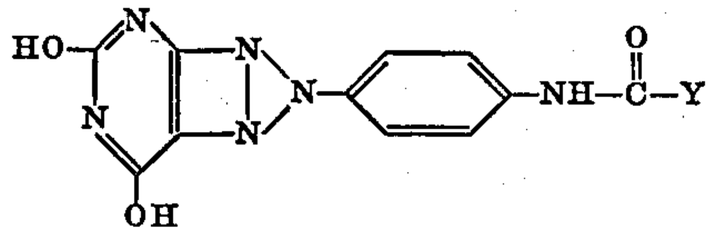
10. 2 - [4-(2,4-dimethoxybenzoylamino)phenyl] - 5,7-dihydroxy-2H-v-triazolo[d]pyrimidine.

11. 2 - [4-(p-chlorobenzoylamino)phenyl] - 5,7-dihydroxy-2H-v-triazolo[d]pyrimidine.

12. 2 - [4-(p-toluylamino)phenyl] - 5,7-dihydroxy-2H-v-triazolo[d]pyrimidine.

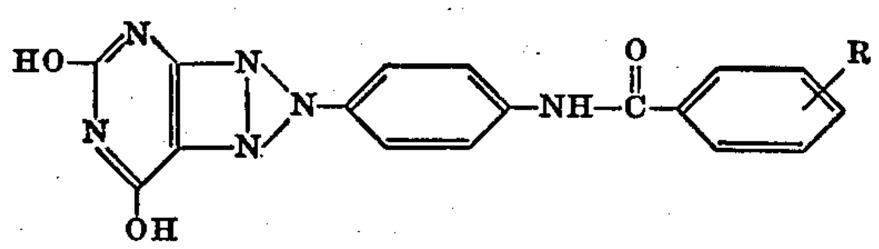
13. 2 - [4-(3-methoxy-2-naphthoylamino)-phenyl]-5-7-dihydroxy-2H-v-triazolo[d]pyrimidine.

14. The process for preparing a 2-(4-aroylaminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine having the structural formula:



where Y is a carbocyclic aryl radical of the class consisting of phenyl, p-biphenylyl, p-stilbyl, naphthyl, p-acetylaminophenyl, p-benzoylaminophenyl, and mono-lower alkoxy-naphthyl wherein lower alkoxy contains 1-2 carbon atoms, and phenyl substituted by 1-2 members of the group consisting of lower alkyl having 1-3 carbon atoms, lower alkoxy having 1-2 carbon atoms, and halogen which comprises reacting 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine with an N-aroyl halide having the formula Y—CO-halogen at a temperature in the approximate range 30° to 100° C. in the presence of an acid-accepting medium to absorb the hydrogen halide formed in the reaction.

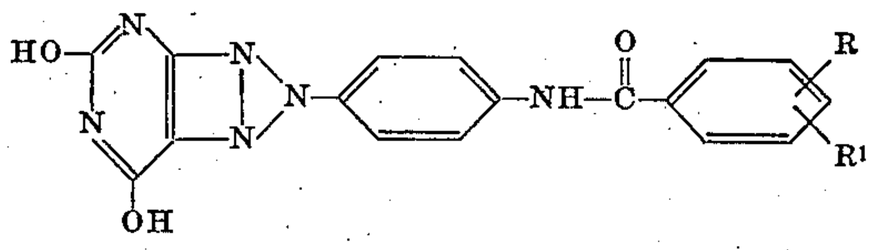
15. The process for preparing a 2-[4-(lower alkoxybenzoyl)aminophenyl] - 5,7 - dihydroxy-2H-v-triazolo[d] pyrimidine having the structural formula:



where R is lower alkoxy having 1-2 carbon atoms which comprises interacting 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine with a (lower alkoxy)benzoyl chloride at a temperature in the approximate range 30°

to 100° C. in the presence of an acid-accepting reaction medium to absorb the hydrogen chloride formed in the reaction.

16. The process for preparing a 2-[4-di-lower alkoxy) benzoylaminophenyl] - 5,7 - dihydroxy-2H-v-triazolo[d] pyrimidine having the structural formula:



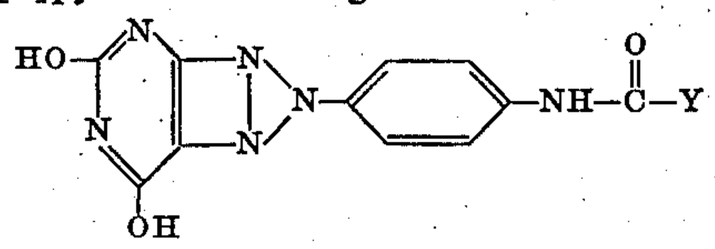
where R and R^1 are lower alkoxy having 1-2 carbon atoms each which comprises interacting 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine with a (di-lower alkoxy)benzoyl chloride at a temperature in the approximate range 30° to 100° C. in the presence of an acid-accepting reaction medium to absorb the hydrogen chloride formed in the reaction.

17. The process for preparing 2-[4-(2,4-dimethoxybenzoylamino)phenyl] - 5,7-dihydroxy-2H-v-triazolo[d] pyrimidine which comprises interacting 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine with 2,4-dimethoxybenzoyl chloride at a temperature in the approximate range 30° to 100° C. in the presence of an acid-accepting reaction medium to absorb the hydrogen chloride formed in the reaction.

18. The process for preparing 2-[4-(3-methoxy-2-naphthoylamino)phenyl] - 5,7 - dihydroxy-2H-v-triazolo [d]-pyrimidine which comprises interacting 2-(4-aminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine with 3-methoxy-2-naphthoyl chloride at a temperature in the approximate range 30° to 100° C. in the presence of an acid-accepting reaction medium to absorb the hydrogen chloride formed in the reaction.

19. A composition selected from the class consisting of (*a*) water-soluble synthetic organic anionic detergents and (*b*) water-soluble synthetic organic non-ionic detergents, and having dissolved therein 0.02–0.5% by

weight of a 2-(4-aroylaminophenyl)-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine having the structural formula:



where Y is a carbocyclic aryl radical of the class consisting of phenyl, p-biphenylyl, p-stilbyl, naphthyl, p-acetylaminophenyl, p-benzoylaminophenyl, and mono-lower alkoxynaphthyl wherein lower alkoxy contains 1–2 carbon atoms, and phenyl substituted by 1-2 members of the group consisting of lower alkyl having 1-3 carbon atoms, lower alkoxy having 1–2 carbon atoms, and halogen.

20. A water-soluble synthetic organic anionic detergent and 0.02–0.5% by weight of said detergent of a 2-{4[(di-lower alkoxy)benzoyl-amino]phenyl}-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine wherein each lower alkoxy contains 1-2 carbon atoms.

21. A water-soluble synthetic organic non-ionic detergent and 0.02–0.5% by weight of said detergent of a 2-{4-[(di-lower alkoxy)benzoylamino]phenyl}-5,7-dihydroxy-2H-v-triazolo[d]pyrimidine, wherein each lower alkoxy contains 1–2 carbon atoms.

22. A water-soluble synthetic organic anionic detergent and 0.02–0.5% by weight of said detergent of 2-[4-(3,4-dimethoxybenzoylamino) - phenyl]-5,7-dihydroxy - 2H-v-triazolo[d]pyrimidine.

23. A water-soluble synthetic organic non-ionic detergent and 0.02–0.5% by weight of said detergent of 2-[4-(3,4-dimethoxybenzoylamino)-phenyl] - 5,7 - dihydroxy-2H-v-triazolo[d]pyrimidine.

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