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NOTE

Spectrophotometric Determination of Inhibition of Bovine Serum Albumin Denaturation of 3-(3-Chloro-4-fluorophenyl)-2-substituted phenyl-4-thiazolidinones

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A series of 3-(3-chloro-4-fluorophenyl)-2-substituted phenyl-4-thiazolidinones were tested for their inhibition of bovine serum albumin denaturation by a simple and reliable spectrophotometric method using Ibuprofen as standard reference. The inhibition results of test compounds and standard drug were found to be 33.6–48.9 and 68.4%, respectively.

Key Words: Spectrophotometric determination, Bovine serum albumin, Thiazolidinones.

It was well known that the cause of inflammation is the denaturation of proteins. The compounds that inhibit the denaturation of proteins *in vitro* may be used as antiinflammatory agents *in vivo*. The inhibition of bovine serum albumin denaturation of various compounds was studied as an *in vitro* model for the determination of antiinflammatory activity[1–3]. These observations stimulated us to study the inhibition of bovine serum albumin denaturation of 3-(3-chloro-4-fluorophenyl)-2-substituted phenyl-4-thiazolidinones by spectrophotometric method.

The compounds, 3-(3-chloro-4-fluorophenyl)-2-substituted phenyl-4-thiazolidinones were prepared and purified as in reported method[4]. Ibuprofen, bovine serum albumin and dimethyl formamide were obtained from standard companies and were of analytical grade. Double distilled water was used to make 0.02 M phosphate buffer whose pH was adjusted to 7.4. Systronic spectrophotometer was used to determine the absorbance measurements.

The compounds 3-(3-chloro-4-fluorophenyl)-2-substituted phenyl-4-thiazolidinones **1(a–i)** were tested for their inhibition of bovine serum albumin denaturation by the following spectrophotometric method.

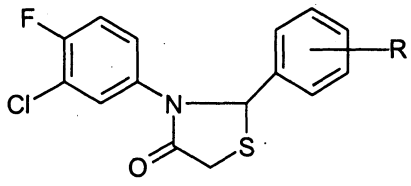
The test compound was dissolved in a minimum amount of dimethylformamide and diluted with 0.2 M phosphate buffer. The final concentration of test solution in dimethylformamide was 2%. The test solution (1 mL) containing 1 mM of test comound was mixed with 1 mL of bovine serum albumin (1 mM) in phosphate buffer and incubated at 27°C for 15 min. The reaction mixture was heated on a water bath at 60°C for 10 min so as to induce denaturation. Afterwards it was cooled and the absorbance was measured at 660 nm. Each experiment was

carried out in triplicate and the mean absorbance was recorded. The percentage inhibition of denaturation was calculated from control where no drug was added.

$$\% \text{ Inhibition} = (V_t/V_c) \times 100 - 100$$

where V_t represents absorbance value in test solution and V_c represents absorbance value in control solution. The results are summarized in Table-1 along with the values for the standard reference Ibuprofen.

TABLE-1
INHIBITION OF BOVINE SERUM ALBUMIN DENATURATION OF 3-(3-CHLORO-4-FLUOROPHENYL)-2-SUBSTITUTED PHENYL-4-THIAZOLIDINONES **1 (a–i)**



I (a–i)

Compound	R	Absorbance ± S.E.	Inhibition (%)
Ia	H	0.127 ± 0.00257	38.0
b	2-NO_2	0.130 ± 0.00230	41.3
c	3-NO_2	0.134 ± 0.00208	45.6
d	4-NO_2	0.129 ± 0.00410	40.2
e	4-Cl	0.137 ± 0.00152	48.9
f	4-CH_3	0.128 ± 0.00241	39.1
g	2-OH	0.129 ± 0.00262	40.2
h	3,4,5-$(OCH_3)_3$	0.125 ± 0.00173	35.8
i	4-$N(CH_3)_2$	0.123 ± 0.00351	33.6
Ibuprofen	—	0.155 ± 0.00346	68.4
Control	—	0.092 ± 0.02645	—

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