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EFFECT OF BINARY BLEND OF VEHICLES ON THE PHYSICAL PROPERTIES OF DIRECTLY COMPRESSED DIIODOQUIN TABLETS

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Directly compressible vehicles such as Avicel, Emdex, Sugratab, Anhydrous Lactose U.S.P, STA-R$_x$1500 starch and Fmcompress. Were used either singly or in binary blends in the ratios of 1:1 1:3 and 3:1 w/w for the preparation diiodoquin tablets.

Avicel, Celutab and STA-R$_x$ 1500 starch were found to be the most suitable single vehicles for the formulation of diiodoquin tablets. Tablets produced using STA-R$_x$ and its blends with the other vehicles, disintegrated within the specified time. The best blends used for the manufacturing of directly compressed diiodoquin tablets were were those containing avicel/STA-R$_x$ 1500 starch 3:1 and 1:3. The least actual concentration of the vehicle needed for the preparation of good diiodoquin tablets was not less than 42.0% w/w.

Direct compression te-chnique has many advantages from the technological point of view, as it requires fewer operations and less machinery. As well as it produced tablets with good chemical stability and biological availability. Therfore direct compression was considered as the best tabletting technique. The reduction of steps, automatically, reduces the

number of varaiables, and thus improves the reproducibility considerably[1] . The aqueous granulation may cause drug decomposition or durg migration during drying[2-4]. Therefore, efforts have attempted to choose dry binders to be used for direct compression and also, the development of directly compressible vehicles[5].

Many direct compression vehicles were investigated and reported eg. Colloidal silica and Cellulose[6], dicalcium phosphate dihydrate[7] anhydrous Lactose[8], microcrystalline Lactose[9-11] dextrose[12] STA-R$_x$1500 starch[13 - 14], Spray crystallized maltose, dextrose[15], Microcrystalline cellulose[1,10,11,16,22] and NU-Tab[23].

Henderson and Bruno[15] stated that no single material has been found to be suitable for all direct compression formulas.

Alpar et al[24] found that with small particls size fractions, spray dried material produced less die wall friction. Larger size fractions of spray dried lactose studied were predominantly crystalline and, therefore, possessed similar properties to crystalline lactose. There was a tendency for tablet strength to increase with reduction in particle size . The main purpose of this study is to prepare diiodoquin tablets using blends of directly compressible vehicles. The produced tablets were evaluated with regard to their physical standards as well as availability and stability .

EXPERIMENTAL

Material:

Microcrystalline cellulose (Avicel) of grade pH101[a], directly compressible starch (STA-R_x1500)[b], Sugartab (processed sucrose)[c], Emcompress[c], Anhydrous Lactose[d], Spray crystallized maltose dextrose (Celutab)[e], diiodoquin[e], Magnesium stearate[e] and Stearic acid[f].

Preparation and evaluation of tablets:

Diiodoquin powder was used as received from the manufacturer and the tablets were prepared using the following formula :

Drug (diiodoquin)	100 parts
Vehicle	25- 100 parts
Magnesium stearate	2% w/w.

Magnesium stearate was found to be unsuitable[13] for STA-R_x1500 starch and, therefore stearic acid was used instead

The actual concentrations of the vehicles used were calculated and found to be 49.0, 32.6, 19.6% w/w for diiodoquin tablets.

Each of Avicel, STA-R_x1500 starch and Celutab was mixed with the other vehicles to produce binary blends in ratios of 1:1, 1:3, and 3:1 . Mixing was carried out in a drum ,

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a) FMC Co., Ponnsylvania U.S.A.
b) A.E. Steles, Mfg Co., Decature Illinois U.S.A.
c) Edward Mendell Co., Inc. New York U.S.A.
d) Shiffield chemical Union, N.J. 01083 U.S.A.
e) CID Co., Assiut branch, Assiut, A.R.E.
f) British drug houses, poole, U.K.

mixer for a period 15 minutes. Manesty F_3 single punch eccentric tablet compression machine was used. The machine was set to produce flat scored 6.44, 0.01 mm. Tablets having an average weight of about 0.1 g with the best possible hardness and loss percent for the blend containing 49% w/w of excipient. The machine setting were kept constant through out the compression for all concentrations of the same excipient. Readjusting of the machine settings were usually necessary on compression of the various vehicles due to variations in their particle size and or bulk density. A minimum of 1000 tablets was produced for each batch.

The mean particle size, the bulk density and angle of repose of the powdered drugs and vehicles were determined according to previousely mentioned procedures[24].

Results obtained are shown in Table 1.

The manufactured tablets were evaluated for their weight uniformity[(B.P. 1973)]:, uniformity of thickness (Baty)[g], hardness (Monsanto)[h], Friability (Roche)[i], and disintegration time [(B.P. 1968)]. according to the previousely mentioned procedures.

RESULTS AND DISCUSSIONS

i) Uniformity of weight:

Diiodoquin failed to be compressed into tablets with lubricant only, except under high pressure using STA-R_x as a vehicle, control tablets were compressed.

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g) Monsanto hardness tester, Monsanto chemical Co., England.

h) Baty Dial Micrometer, Model 120 - 1206, Baty Co., Ltd. Sussex, England.

i) Roche Friabilator, Erweka apparatabeau Frnkfurt, Western Germany.

Finness, aggregation of particles, and bad flow properties of diiodoquin were the main reasons which responsible for incompressibility of diiodoquin even under high pressure.

Tablets produced showed capping. Single vehicles produced tablets of uniform weights. Tablets produced using high actual concentration of the vehicles gave high C.V.% values except for STA-R_x1500 starch was small. This means that the manufactured tablets had excellent uniformity of weight according to the reported standards[26,27].

Binary blends of Avicel, Celutab and STA-R_x1500 with the other vehicles produced some uniform batches. On the other - hand binary blends of Avicel with anhydrous Lactose in ratio 1:1 produced only two uniform batches, with small C.V.% values. The prepared tablets using Avicel binary blends in ratio - 1:1 with other vehicles can be arranged as follows with regard to their uniformity of weight.

Avicel/Celutab, Avicel/Sugartab , Avicel/STA-R_x, Avicel/ Anhydrous Lactose, Avicel/Emcompress.

On the other hand STA-R_x1:1 blends with other vehicles produced non uniform tablets. So, with respect to uniformity of weight of the produced tablets STA-$R_x$blends with other vehicles gave rise to the following sequence.

STA-R_x/Anhydrous Lactose, STA-R_x/Celutab, STA-R_x/ Emcompress.

Segregation which accur may be responsible for the incompressibility of some batches. Tablets produced using Celutab 1:1 blends with the other vehicles, can be arranged as follows with regard to uniformity of their weight.

Celutab/Anhydrous Lactose > Celutab/Sugrtab > Celutab/ Amcompress.

No significant effect was observed by increasing the percentage of Celutab in the formula. The thickness of the

produced tablets was determined in-spite of being non-official measure, the uniformity of thickness been reported by sorensen[28]. Measurements of the thickness gave additional limit to tablet dimensions and reproducibility. The variation of thickness values of diiodoquin tablets were parallel to those of weight as shown in Table 3.

ii) Disintegration Time:

There are certain factors affecting tablet disintegration e.g. nature of excipient used, hardness, presence or abscence of surfactant disintegrant and nature of drug and disintegration media used[29].

From table 3 it was shown that, only diiodoquin prepared using STA-R_x1500 passed the limit according to B.P. 1973.

Tablets prepared using blend of vehicles were investigated, only STA-R_x1500 blends with other vehicles produced tablets that disintegrated within the limit, except those produced using Avicel/STA-R_x 3:1 and 1:3.

One batch that containing 49% w/w of Avicel/STA-R_x1:3 passed the test.

Batches of STA-R_x/Anhydrous Lactose 3:1 and STA-R_x/ Emocompress 3:1 produced tablets that disintegrated out of the limit except for two batches which was disintegrated within the limit, these batches have actual concentration of 49% w/w from the two previous blends. On the other-hand other blends disintegrated away from the limit of B.P. 1973.

In general, tablets containing STA-R_x disintegrated within the limit. This may due the effect of STA-R_x1500 starch

as disintegrant. The tablets containing Avicel, Celutab, Sugrtab and Anhydrous Lactose were of relatively higher hardness values, which may cause their delayed disintegration.

iii) Hardness;

All diiodoquin tablets produced were soft and had small hardness values. Some of the batches cannot be compressed. The hardness value not more than 8.53 kg with high C.V.% 54.67.

Emcompress when used singly failed to produce directly compressed tablets. This may due to segregation of the mixture which arised from dissimilarity in particle size. With respect to the hardness of the produced tablets, single vehicles can be arranged in the following order. Avicel > STA-R_x > Celutab > Anhydrous Lactose > Sugartab. On the other hand when Avicel was blended with other vehicles, the hardness of the manufactured diiodoquin tablets was increased.

Blends of Avicel and Emcompress produced diiodoquin tablets with relatively higher hardness values which increased by increasing the proportion of Avicel in the blends. Avicel blends 1:1 can be arranged as follows with regard to hardness of diiodoquin tablets produced.

Avicel/STA-R_x 1:1 > Avicel/Anhydrous Lactose 1:1 > Avicel/Emcompress 1:1 > Avicel/Celutab 1:1 > Avicel/Sugartab 1:1

Another arrangment was obtained as follows for Celutab blends.

Celutab/Anhydrous Lactose 3:1 > 1:3 > 1:1 > Celutab/Sugartab 3:1>Celutab/Emcompress 3:1 >Celutab/Sugartab 1:1

iv) Friability:

Friability of tablets depends on the nature of the vehicle and its concentration in the formula.

Batches using Avicel 49% w/w produced diiodoquin tablets with the least friability values.

Concerning the fraibility of the produced diiodoquin tablets single vehicele can be arranged in the following sequence:

Celutab < Avicel < Anhydrous Lactose < Sugartab < STA-R_x < Emcompress. Emcompress that may have no good binding properties, gave completely friable tablets (100% friability).

When Avicel blended with other vehicles loss% values decreased by increasing the vehicle ratio in the formula. This may be due to good hydrogen bonds between Avicel and drug and other vehicles. Friability of the tablets manufactured using: Avicel blends can be arranged as follows:

Avicel/Celutab 3:1 < Avicel/Emcompress 1:1 < Avicel/Anhydrous Lactose 3:1 < Avicel/Celutab 3:1< 1:3 < Avicel/Sugartab < 3:1.< 1:1. On the other hand.

STA-R_x1500 which produced harder tablets on blending with other vehicles can be arranged with respect to loss % as follows:

STA-R_x/Anhydrous Lactose 1:1 < STA-R_x/Celutab 1:1< STA-R_x/ Emcompress 1:1 < STA-R_x/Celutab 1:3

Another arrangment fpr Celutab blends was given in the followingsequence.

Celutab/Anhydrous Lactose 3:1 < Celutab/Sugartab 1:1 < Celutab/Sugartab 3:1 < Celutab/Emcompress 1:1

hardness Friability Ratio (H.F.R.):

It can give an indication of the mechanical properties of the tablets [30]. It is calculated by dividing the mean hardness of the batch by its mean friability. The increase in proportion of the vehicle in the formula, was accompanied by the increase in H.F.R. This may due to the improvement

of hardness of tablets produced and decreasing their friability.

Vehicles show good hardness preasure profile, give high H.F.R. values. Accordingly, single vehicles with respect can be arranged as follows:

Avicel > Celutab > STA-R_x > Anhydrous Lactose > Sugartab

Hydrogen bonding may occur between Avicel and drug and therfore gave good hardness pressure profile. In this case Avicel was expected to gave highest H.F.R. value. Celutab had also good binding property wich may lead to smaller friability.

Vehicles when blended with each others as binary blends each potentiate the other and improve the mechenical properties. Avicel blends with other vehicles can be arranged as follows with regard to their H.F.R.

Avicel/Anhydrous Lactose 1:1 > Avicel/Emcompress 1:1 > 1:1 > Avicel/STA-R_x1500 1:1.

Binary blends of STA-R_x1500 with the other vehicles can be arranged with respect to H.F.R. values in following sequence:

STA-R_x/Anhydrous Lactose 1:1 > 1:3 > 3:1 STA-R_x/Emcompress 1:1 > STA-R_x/Sugartab 1:1 > STA-R_x/Celutab 1:1

In the same respect Celutab blends can be arranged as follows :

Celutab/Anhydrous Lactose 3:1 > 1:1 > Celutab/Sugartab 3:1 > 1:1 >Celutab/Emcompress 1:1

Table 1: Physical properties of powdered Diiodoquin and direct compression vehicles used

Materials	*Average particle size (U)*	*packed bulk density gm/ml*	*angle of repose*
Diiodoquin	38.15	0.43	54° 18"
Avicel PH 101	82.99	0.355	40° 00
STA-R_x1500	113.21	0.668	28° 30"
Anhydrous Lactose	185.07	0.559	40° 00"
Celutab	342.58	0.683	31° 58"
Sugartab	661.12	0.641	36° 42"

Table 2 Effect of single vehicles on the physical characteristics of Diiodoquin tablets

vehicle name	Conc.% w/w	weight (gm) mean	weight C.V.%	thickness (mm) mean	thickness C.V.%	hardness (Kg) mean	hardness C.V.%	friability (loss%) mean	friability C.V.%	No. of capped tablets	H.F.R.	D.T. (minutes) mean	D.T. C.V.%
Avicel	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6	0.078	2.07	2.01	1.38	0.25	20.48	2.93	8.56	811	0.9		>120
	32.6	0.084	1.95	2.10	0.50	1.10	11.73	1.83	23.78	811	0.8	68.72	16.69
	42.0	0.084	2.55	2.12	0.52	1.22	11.63	1.64	35.04	811	0.74	58.74	28.99
	49.0*	0.1131	1.04	2.48	0.47	3.52	5.21	1.33	20.49	"6"	2.65	105.34	15.02
Anhydrous Lactose	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6	-	-	-	-	-	-	-	-	-	-	-	-
	32.6	0.097	9.7	2.35	2.56	1.15	23.36	2.97	5.16	811	0.39	108.73	1.39
	42.0	0.099	1.14	2.39	1.86	1.13	11.71	2.28	11.07	"7"	0.50	77.03	12.38
	49.0	0.105	1.75	2.44	1.19	1.77	16.9	1.84	8.84	"8"	0.96	63.63	13.78
Emcompress	0	Cannot be compressed.											
	19.6												
	32.6												
	42.0												
	49.0												
Celutab	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6	-	-	-	-	-	-	-	-	-	-	-	-
	32.6	0.095	3.00	2.42	0.71	1.05	10.03	6.84	19.58	"5"	0.15	19.59	11.17
	42.0	0.102	1.35	2.46	2.02	1.34	26.80	1.26	22.87	"6"	1.06	68.46	48.2
	49.0	0.107	5.85	2.51	1.28	1.85	20.34	1.04	14.2	"8"	1.78	62.56	9.43
Sugartab	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6	-	-	-	-	-	-	-	-	-	-	-	-
	32.6	0.095	9.05	2.49	2.89	0.75	31.42	5.66	30.14	60.133			> 120
	42.0	0.110	4.09	2.47	1.74	1.1	15.88	2.09	7.21	60.53			> 120
	49.0*	0.1191	6.85	2.45	1.44	1.13	17.99	2.06	15.75	60.55			> 120
STA-R_x 1500	0	0.0784	3.68	1.86	1.92	1.05	15.06	8.079	24.18	5	0.13		> 120
	19.6	8.0908	2.17	1.99	0.63	1.60	28.71	4.09	27.23	7	0.39	14.45	8.5
	32.6	0.0957	4.53	2.207	2.41	1.70	21.18	2.54	9.07	4	0.42	10.29	5.16
	42.0	0.1078	1.80	2.31	1.84	2.70	17.34	2.65	15.49	3	1.01	9.14	14.97
	49.0*	0.1101	1.71	7.34	0.28	2.88	15.09	2.08	9.28	3	1.38	9.03	10.38

Table 3: Effect of blends of Avicel with other vehicles on the physical characteristics of Diiodoquin tablets

Vehicle name	Conc.% w/w	*weight (gm)* mean	C.V.%	*thickness (mm)* mean	C.V.%	*Hardness (Kg)* mean	C.V.%	*Friability (loss%)* mean	C.V.%	*No. of cepped tablets*	*H.F.R.*	*D.T. (minutes)* mean	C.V.%
Avicel	0 *	0.0896	5.54	2.29	1.56	1.42	16.94	8.66	5.38	0	0.15	> 120	
Anhydrous	19.6	0.109	1.115	2.41	0.61	2.13	8.32	1.30	3.42	0	1.53	> 120	
Lactose	32.6	0.1095	1.05	2.31	0.72	2.65	11.93	1.28	3.48	0	2.07	> 120	
1:1	42.0*	0.1166	0.84	2.48	0.57	3.08	7.71	1.01	17.8	0	3.05	> 120	
	49.0*	0.1158	3.55	2.499	1.13	3.65	4.78	0.73	56.24	0	5.00	> 120	
Avicel	0	-	-	-	-	-	-	-	-	-	-	-	-
Anhydrous	19.6	0.103	1.97	2.31	0.74	1.63	19.52	1.66	18.87	8	0.98	> 120	
Lactose	32.6*	0.1164	1.13	2.39	0.35	3.35	5.21	1.14	10.86	0	2.94	> 120	
1:3	42.0*	0.104	1.01	2.43	0.44	4.08	11.21	0.926	4.59	0	4.41	> 120	
	49.0*	0.1234	2.21	2.60	1.46	5.13	10.34	0.64	23.9	0	8.02	> 120	
Avicel/	0	-	-	-	-	-	-	-	-	-	-	-	-
Anhydrous	19.6	0.1010	3.91	2.35	0.39	1.75	17.8	2.42	6.76	9	0.72	> 120	
Lactose	32.6	0.1004	6.06	2.37	1.08	1.85	14.63	1.61	10.52	4	1.15	> 120	
3:1	42.0*	0.1127	3.01	2.45	0.76	2.45	8.22	0.89	2.58	0	2.75	> 120	
	49.0*	0.1122	0.97	2.44	0.53	3.63	8.13	0.71	42.99	0	5.11	> 120	
Avicel/	0	-	-	-	-	-	-	-	-	-	-	-	-
Emcompress	32.6	0.107	3.51	2.36	0.511	1.77	12.36	3.37	6.78	2	0.53	> 120	
1:1	42.0	0.123	3.76	2.44	0.93	3.15	11.34	1.11	30.12	0	2.84	> 120	
	49.0	0.126	3.67	2.50	1.27	3.62	8.13	0.68	13.85	0	5.33	> 120	
Avicel/	0	-	-	-	-	-	-	-	-	-	-	-	-
Emcompress	19.6	0.092	6.84	2.25	1.36	1.03	21.35	3.168	12.69	3	0.33	> 120	
1:3	32.6	0.0977	1.52	2.29	1.06	1.28	14.52	2.76	22.51	5	0.48	> 120	
	42.0*	0.1118	1.54	2.33	0.56	1.67	15.85	1.36	44.7	2	1.23	> 120	
	49.0*	0.1201	2.22	2.39	2.21	2.35	8.97	1.8	22.3	0	1.31	> 120	

Table 3 Cont.

Vehicles name	Conc.% w/w	Weight (gm) mean	Weight (gm) C.V.%	Thickness (mm) mean	Thickness (mm) C.V.%	Hardness (Kg) mean	Hardness (Kg) C.V.%	Friability (Loss.%) mean	Friability (Loss.%) C.V.%	No. of capped tablets	H.F.R.	D.T. (minutes) mean	D.T. (minutes) C.V.%
Avicel/	0-												
Emcompress	19.6*	0.080	7.87	2.23	0.84	1.55	185.33	6.71	3.16	2	0.23	> 120	
3:1	32.6	0.106	3.51	2.29	0.81	1.6	11.11	2.71	32.56	4	0.59	> 120	
	42.0	0.1027	1.00	2.86	22.89	1.8	12.16	2.83	20.88	3	0.63	> 120	
	49.0*	0.124	1.99	2.36	1.30	2.47	2.46	1.56	16.18	0	1.58	> 120	
Avicel /	0												
Celutab	19.6	0.093	2.78	2.35	0.29	1.250	13.33	0.009	43.91		0.42	> 120	
1:1	32.6	0.099	1.58	2.42	1.04	1.20	13.17	2.135	45.39		0.58	> 120	
	42.0	0.1048	1.8o	2.48	0.33	1.75	11.66	1.40	27.09		1.24	> 120	
	49.0	0.103	3.23	2.45	0.53	1.87	I4.44	0.78	29.00		2.40	> 120	
Avicel/	0												
Celutab	19.6	0.0926	2.36	2.43	0.21	.95	20.75	4.69	9.78	811	0.202	> 120	
1:3	32.6	0.1077	2.21	2.40	0.37	1.20	8.78	1.90	13.33	18	0.83	> 120	
	42.0*	0.1102	1.63	2.51	0.46	1.6	15.10	1.60	5.9	12	0.95	> 120	
	49.0*	0.1202	2.43	2.56	1.29	2.57	10.3	0.67	7.19	0	3.84	> 120	
Avicel/	0												
Celutab	19.6	1025	1.70	2.34	1.29	1.40	15.05	1.43	19.28	12	0.98	> 120	
3:1	32.6	0.104	1.86	2.30	0.26	1.88	7.07	0.73	13.2	8	2.45	> 120	
	42.0	0.1088	1.37	2.46	0.82	2.68	8.86	0.33	35.35	6	8.12	> 120	
	49.0*	0.1122	3.45	2.51	0.56	1.20	8.6	0.282	57.57	0	13.79	> 120	
Avicel/	0												
Sugartab	19.6	0.094	3.24	2.33	1.35	0.93	13.05	3.88	76.33	13	0.24	> 120	
1:1	32.6	0.105	6.29	2.51	1.55	1.28	14.46	1.88	96.7	8	0.70	> 120	
	42.0	0.1093	5.06	2.55	1.16	1.60	13.17	1.83	40.77	7	0.87	> 120	
	49.0	0.1095	4.91	2.63	1.18	1.69	14.07	1.73	22.80	5	1.37	> 120	

Table 4: Effect of blends of STA-R_x 1500 with other vehicles on the physical characteristics of Diiodoquin tablets.

Vehicles Name	Conc.% w/w	Weight (gm) mean	Weight C.V.%	Thickness (mm) mean	Thickness C.V.%	Hardness (Kg) mean	Hardness C.V.%	Friability (Loss.%) mean	Friability C.V.%	No. of cepped tablets	H.F.R.	D.T. (minutes) mean	D.T. C.V.%
STA-R_x/		-	-	-	-	-	-	-	-	-	-	-	-
Anhydrous	0	-	-	-	-	-	-	-	-	-	-	-	-
Lactose	19.6	0.096	2.52	1.94	0.74	1.50	10.41	2.72	34.95	13	0.55	108.42	70.85
1:1	32.6	0.1065	2.55	2.07	1.07	1.88	11.33	2.71	69.95	15	0.69	24.51	5.97
	42.0*	0.117	2.58	2.20	1.29	4.70	77.43	1.54	52.78	1	3.05	25.80	11.75
	49.0*	0.129	0.88	2.39	1.19	8.53	54.67	0.77	10.54	0	11.08	15.55	9.45
STA-R_x/	0	-	-	-	-	-	-	-	-	-	-	-	-
Anhydrous	19.6	-	-	-	-	-	-	-	-	-	-	-	-
Lactose	32.6	0.094	3.83	2.05	1.41	1.50	15.71	2.54	55.12	811	0.59	45.03	10.04
1:3	42.0*	0.1134	1.88	2.22	1.13	4.73	8.90	0.984	21.9	0	4.81	26.69	13.58
	49.0*	0.1270	1.36	2.36	6.77	7.90	7.02	0.935	78.05	0	8.45	34.59	4.34
STA-R_x/	0	-	-	-	-	-	-	-	-	-	-	-	-
Anhydrous	19.6	-	-	-	-	-	-	-	-	-	-	-	-
Lactose	32.6	0.095	5.31	2.13	1.22	1.225	17.86	3.05	31.48	11	0.40	11.03	11.84
3:1	42.0	0.109	2.60	2.31	0.814	1.80	10.95	1.29	10.3	13	1.40	8.81	22.06
	49.0*	0.1194	1.78	2.40	0.611	3.40	8.53	0.923	7.08	3	3.68	17.91	13.25
STA-R_x/	0	-	-	-	-	-	-	-	-	-	-	-	-
Emcompress	19.6	-	-	-	-	-	-	-	-	-	-	-	-
1:1	32.6	-	-	-	-	-	-	-	-	-	-	-	-
	42.0*	0.119	0.209	2.34	0.8	1.58	15.04	1.57	66.14	14	1.07	4.17	30.4
	49.0*	0.124	2.36	2.44	0.755	2.05	11.20	1.32	35.28	5	1.55	4.18	11.93
STA-R_x/	0	-	-	-	-	-	-	-	-	-	-	-	-
Emcompress	19.6	-	-	-	-	-	-	-	-	-	-	-	-
1:3	32.6	-	-	-	-	-	-	-	-	-	-	-	-
	42.0	-	-	-	-	-	-	-	-	-	-	-	-
	49.0*	0.121	1.88	2.51	0.62	1.25	16.32	5.14	19.04	811	0.24	1.78	24.4
STA-R_x/	0	-	-	-	-	-	-	-	-	-	-	-	-
Emcompress	19.6*	0.084	0.71	2.197	1.02	0.825	20.45	5.42	50.5	811	0.152	23.13	18.85
3:1	32.6*	0.088	0.912	2.26	1.03	0.725	25.44	5.89	6.14	811	0.120	12.55	6.62
	42.0	0.097	1.28	2.31	1.00	0.83	33.73	5.22	43.34	811	0.16	5.60	18.81
	49.0*	0.1036	1.74	2.44	1.04	0.85	20.56	1.56	16.78	811	0.54	5.75	13.43

Table 4: Cont.

Vehicles		Weight (gm)		Thickness (mm)		Hardness (Kg)		Friability (Loss.%)		No. of cepped tablets	H.F.R.	D.T. (minutes)	
Name	Conc.% w/w	mean	C.V.%	mean	C.V.%	mean	C.V.%	mean	C.V.%			mean	C.V.%
STA-R / Celutab 1:1	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6	-	-	-	-	-	-	-	-	-	-	-	-
	32.6	-	-	-	-	-	-	-	-	-	-	-	-
	42.0*	0.1132	3.81	2.41	1.03	1.45	19.57	2.11	35.25	16	0.89	13.31	9.40
	49.0	0.1032	2.53	2.32	1.76	2.5	22.53	1.81	37.70	811	1.38	12.99	4.41
STA-R / Celutab 1:3	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6	-	-	-	-	-	-	-	-	-	-	-	-
	32.6	0.0979	5.35	2.16	0.951	0.825	28.74	3.36	10.74	811	0.25	35.55	9.85
	42.0	0.1050	4.18	2.30	1.34	2.25	10.47	1.65	12.89	16	1.36	26.03	13.42
	49.0*	0.116	3.95	2.39	1.29	3.08	16.72	1.46	35.45	14	2.11	33.68	3.79
STA-R / Celutab 3:1	0 *	0.080	5.811	2.045	1.26	0.9	19.42	5.84	4.68	811	0.15	>120	
	19.6	0.0939	1.488	2.103	2.32	1.075	11.33	3.39	14.79	12	0.33	30.79	7.90
	32.6	0.102	2.80	2.24	1.06	1.30	15.16	2.40	8.84	15	0.54	13.80	6.03
	42.0	0.108	0.990	2.31	0.86	1.63	10.87	2.31	25.33	14	0.71	12.48	17.17
	49.0*	0.1164	1.99	2.47	1.57	2.36	7.43	1.91	23.81	7	1.24	1.67	9.98
STA-R / Sugartab 1:1	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6	0.085	2.45	2.19	1.57	0.90	14.34	3.51	38.20	811	0.26	>120	
	32.6	0.1023	2.74	2.30	1.80	1.25	16.32	3.44	36.20	811	0.36	20.21	36.31
	42.0*	0.1174	4.73	2.44	1.51	1.30	15.01	2.53	24.72	811	0.51	17.00	10.15
	49.0*	0.1187	4.33	2.51	1.39	1.81	12.51	1.28	23.55	811	1.41	13.09	9.69
STA-R / Sugartab 1:3	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6*	0.0859	4.55	2.35	1.13	0.4	32.27	5.42	3.90	811	0.074	>120	
	32.6	0.099	4.48	2.38	1.62	0.45	34.0	5.67	43.53	811	0.079	73.61	11.73
	42.0	0.0911	1.36	0.106	5.55	0.48	34.3	4.55	18.48	811	0.101	45.95	7.37
	49.0*	0.1105	5.54	2.46	2.02	0.55	19.16	3.50	30.30	811	0.157	26.0	8.01
STA-R / Sugartab 3:1	0	-	-	-	-	-	-	-	-	-	-	-	-
	19.6*	0.081	1.95	2.116	0.637	0.45	35.13	6.33	25.98	811	0.071	21.75	9.75
	32.6	0.0919	2.65	2.23	1.37	0.46	35.14	6.24	50.8	811	0.074	11.14	7.93
	42.0	0.0995	2.88	2.36	1.32	0.575	29.34	0.985	51.11	811	0.58	9.70	
	49.0	0.1032	2.83	2.45	1.68	0.625	21.08	0.805	28.33	811	0.78	11.86	

Table 5: Effect of blends of Celutab with other vehicle on the physical characteristics of Diiodoquin tablets

Vehicles		Weight (gm)		Thickness (mm)		Hardness (Kg)		Friability (Loss.%)		No. of cepped	H.F.R.	D.T. (minutes)	
Name	Conc.% w/w	mean	C.V.%	mean	C.V.%	mean	C.V.%	mean	C.V.%	tablets		mean	C.V.%
Celutab/	0												
Anhydrous	19.6	0.0977	4.55	2.39	1.20	0.45	35.41	4.41	57.6	811	0.102	> 120	
Lactose	32.6	0.104	2.40	2.41	1.91	0.95	16.64	1.64	10.12	811	0.58	> 120	
1:1	42.0*	0.1147	2.80	2.49	1.66	1.50	13.6	0.77	17.55	811	1.95	> 120	
	49.0*	0.1144	2.22	2.44	1.01	1.65	16.28	0.63	33.51	811	2.62	> 120	
Celutab/	0												
Anhydrous	19.6												
Lactose	32.6	0.1045	2.08	2.43	7.69	1,15	15,20	1.50	20.13	811	0.77	> 120	
1:3	42.0*	0.11030	1.044	2.45	6.40	1.43	11.87	1.28	23.35	811	1.16	> 120	
	49.0*	0.1163	1.01	2.53	6.01	1.98	21.05	1.20	22.41	811	1.65	> 120	
Celutab/	0.												
Anhydrous	19.6												
Lactose	32.6	0.1008	3.34	2.36	9.14	0.825	20.45	4.51	51.82	811	0.16	> 120	
3:1	42.0*	0.1135	2.47	2.48	8.73	1.30	15.16	0.782	36.31	811	1.66	> 120	
	49.0*	0.1154	2.07	2.51	12.65	2.05	17.05	0.301	3.61	811	5.38	> 120	
Celutab	0												
Emcompress	19.6												
1:1	32.6	0.0970	2.33	2.35	9.66	0.5	21.16	5.71	32.15	811	0.105	> 120	
	42.0*	0.1124	1.73	2.40	6.18	0.825	28.16	5.58	33.86	811	0.15	> 120	
	49.0*	0.1195	2.30	2.45	5.65	1.10	15.89	2.41	21.34	811	0.46	> 120	
Celutab/	0												
Emcompress	19.6												
1:3	32.6	0.0973	3.03	2.31	1.65	0.375	35.13	8.51	62.31	811	0.044	> 120	
	42.0	0.1072	2.63	2.33	8.21	0.425	28.41	7.64	58.53	811	0.055	> 120	
	49.0*	0.1146	4.23	2.35	7.49	0.75	28.17	5.31	47.23	811	0.141	> 120	

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تاثير خلطات ثنائية من الصواغات على الخواص الطبيعية لاقراص الداى أيودوكين المحضرة بطريقة الكبس المباشر

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استخدمت صوغات الكبس المباشر بمفردها أو فى خليط ثنائى نسبته ١:١ ، ٣:١ ، ٣:١ وزن/وزن وقد أختبرت الصواغات الاتية : الافسيل والامدكس والشجرتاب ، والامكميرس فى تحضير اقراص الداى أيودوكين.

وقد وجد أن الافسيل والسلوتاب والنشا أس تى أراكس هما أفضل صوغات لصياغة أقراص الداى أيودوكين. ولقد وجد أن الاقراص المحضرة بأستخدام النشا أس تى أر اكس وخلطاته أنتجت اقراصا تتفتت فى الوقت المحدد. ولقد وجد أن أفضل خلطه صوغات لتصنيع اقراص الداى أيودوكين هى أفسيل/ نشا أس تى أر أكس ١٥٠٠ بنسبة ١/٣ ، ٣:١.

ولقد وجد أن أقل كمية من الصواغ اللازمة لتصنيع أقراص الداى أيودوكين المناسبة لا تقل عن ٤٢ / وزن/وزن.

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