

SPECIFICATION

Multi-fractionable tablet structure

- 5 The present invention relates to a specially configured multi-scored variously configured tablet structure constituting a unitary dosage having readily severable sections which may be divided accurately and separated conveniently into multi-sectional sub-
- 10 dosage units for patient consumption. The score markings are disposed specially such as along the top and bottom surfaces. Additionally, score markings may appear along opposite vertical side surfaces of the tablet.
- 15 It is well known in the pharmaceutical art that tablets may be formed with a groove or score marking to facilitate breakage of the tablet into sub-dosage units. Typically, these tablets are configured circularly with a transverse score marking
- 20 disposed along the top surface of the tablet such that the tablet may be severed into half-sections. One example of such a tablet is that disclosed by Geller, in U.S. Patent No. 3,883,647. Another example of a tablet having surface score lines and a circular
- 25 configuration except severable into quarter-sections is the maltese-cross scored tablet disclosed by Languaer in U.S. Patent No. 3,723,614.
- Because of the inherent difficulties of breaking a grooved tablet into accurate predetermined parts, a
- 30 variety of diverse attempts have been made in the prior art seeking tablet structures which are readily fractured into sub-dosage units by application of moderate manual pressure. One example of such an attempt is that disclosed by Kraus et al, in U.S.
- 35 Patent No. 3,336,200, where two half sections having a highly tapered top surface which join at a score line positioned along the diameter of the tablet. These diverse attempts to improve the convenience and accuracy of breaking a grooved tablet into predeter-
- 40 mined parts have achieved limited success at best.
- Inherently, the problem of breaking a grooved circular tablet resides in the hardness factor which results from tablet forming presses coupled with the small size configuration which does not allow for
- 45 either ease of handling or breaking. A typical attempt to sever such circular tablet is by means of a sharp knife or related instrument which results more often than not, in fracture of the tablet into undesired miniature pieces. In cases where the severing into
- 50 two pieces is successful, the pressure which is required along the score marking frequently propels both sections from the initial location unless extreme care is used to contain the two pieces during the breaking operation.
- 55 In order to overcome the problem of breaking circular tablets because of the hardness factor and small size, prior art attempts have also been made to configure oblong tablets having score lines disposed transversely along the top surface. One
- 60 example of such a tablet is that disclosed by Zellers in U.S. Patent No. 2,052,376. These oblong tablet configurations have also realized limited success in providing a solution to a readily, accurately severable unitary dosage tablet into sub-dosage units.
- 65 Also, although tablets such as those disclosed by

Zellers are oblong in appearance, the transverse cross-sectional configuration thereof is typically cylindrical. This configuration invites disadvantages associated with inclusion of sufficient amounts of

70 active ingredients in a configuration which may be readily consumed without suffering patient discomfort.

One of the well recognized advantages of having a readily dividable tablet is that it permits the administration of a plurality of sub-dosage units thereby

75 avoiding costs for specially preparing an individual tablet for each dosage unit.

It has now been found that by practice of the present invention, unitary dosage tablets may be

80 prepared having specially disposed score markings which permit breakage of the unitary dosage tablet into multi-sectional sub-dosage units in a convenient, accurate manner. Thus, a number of the disadvantages inherent in prior art attempts to

85 provide a solution to tablet breakage into accurate sub-dosage units which may be conveniently consumed by a patient have now been overcome by practice of the present invention.

The present invention provides a tablet structure

90 which comprises a unitary body having oppositely disposed first and second substantially horizontal surfaces joined respectively by a substantially vertical wall or walls, any one of said first horizontal surface, or said second horizontal surface, or said

95 substantially vertical wall(s) containing at least two transverse scores and at least one other of said surfaces or wall(s) containing a respective single transverse score, provided that, in the case of a tablet having only a single substantially vertical wall,

100 the latter may have two transverse scores, whereby the unitary body may be fractured along the at least two transverse scores to form three fragments, or fractured along the (respective) single transverse score(s), or two scores in the single substantially

105 vertical wall case, to form two fragments.

The first and second surfaces just mentioned may define the top and bottom surfaces respectively.

Thus the present tablet may have a multi-angular configuration with specially disposed transverse

110 scores positioned along both the top and bottom surfaces.

In three general embodiments which may be mentioned here, the tablet has an approximately rectangular outline with:

- 115 (1) two transverse scores roughly equally positioned along both the top and bottom surfaces, with intermediately both disposed scores positioned along opposite or vertical side wall sections; or
- (2) two vertical scores roughly equally positioned
- 120 along opposite vertical side wall sections, with intermediately disposed scores positioned along both the top and bottom surfaces; or
- (3) two transverse scores disposed along the top surface and defining three approximately equal
- 125 dosage units, with a longitudinal score disposed along the bottom surface and defining two approximately equal dosage units.

In two further general embodiments which may be mentioned here, the tablet has an approximately

130 circular or elliptical outline, with:-

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(4) two vertical scores roughly equally positioned along opposite vertical side wall sections of the tablet with intermediately disposed scores positioned along both the top and bottom surfaces thereof; or
(5) two transverse scores disposed along the top surface thereof and defining three approximately equal dosage units in configuration with a longitudinal score disposed along the bottom surface of the tablet and defining two approximately equal dosage units.

The present tablet structure can be readily prepared using conventional tablet-forming presses even though it is to have the specially positioned scores specified.

Preferred embodiments of the invention are indicated in the specific description which now follows and in the accompanying drawings, wherein similar elements are identified by like numerals throughout the several views. In the present description, the terms "score", "score marking" and "score line" are equivalent to one another, and the terms "multisectional", and "trisectional" refer to a tablet structure design facilitating fracture into a plurality of fragments, or into three fragments, respectively.

Description of the Figures

Figure 1 is a perspective view of a multi-fractionable pharmaceutical tablet illustrating one embodiment of the present invention;

Figure 2 is a top elevational view of the pharmaceutical tablet of Figure 1;

Figure 3 is a transverse cross-sectional view of the pharmaceutical tablet of Figure 2 taken along sectional lines 3-3;

Figure 4 is a longitudinal cross-sectional view of the pharmaceutical tablet of Figure 2 taken along sectional lines 4-4;

Figure 5 is a perspective view of another embodiment multi-fractionable pharmaceutical tablet of the present invention;

Figure 6 is a top elevational view of the pharmaceutical tablet of Figure 5;

Figure 7 is a transverse cross-sectional view of the pharmaceutical tablet of Figure 6 taken along sectional lines 7-7;

Figure 8 is a longitudinal cross-sectional view of the pharmaceutical tablet of Figure 6 taken along sectional lines 8-8;

Figure 9 is a perspective view of yet another embodiment multi-fractionable pharmaceutical tablet of the present invention;

Figure 10 is a top elevational view of the pharmaceutical tablet of Figure 9;

Figure 11 is a bottom elevational view of the pharmaceutical tablet of Figure 9;

Figure 12 is a longitudinal cross-sectional view of the pharmaceutical tablet of Figure 10 taken along sectional lines 12-12;

Figure 13 is an end view of the pharmaceutical tablet of Figure 10;

Figure 14 is a top elevational view of yet another embodiment multi-fractionable pharmaceutical tablet of the present invention;

Figure 15 is a front elevational view of the

pharmaceutical tablet of Figure 14;

Figure 16 is a top elevational view of yet another embodiment pharmaceutical tablet of the present invention;

Figure 17 is a bottom elevational view of the pharmaceutical tablet of Figure 16; and

Figure 18 is a transverse cross-sectional view of the pharmaceutical tablet of Figure 16 taken along sectional lines 18-18

Figure 19 is a perspective view of a multi-fractionable pharmaceutical tablet illustrating yet another embodiment of the present invention;

Figure 20 is a top view of the pharmaceutical tablet of Figure 19;

Figure 21 is a bottom view of the tablet of Figure 19;

Figure 22 is a transverse cross-sectional view of the pharmaceutical tablet of Figure 20 taken along sectional lines D-D;

Figure 23 is a perspective view of yet another embodiment multi-fractionable pharmaceutical tablet of the present invention;

Figure 24 is a bottom view of the pharmaceutical tablet of Figure 23;

Figure 25 is a longitudinal cross-sectional view of the pharmaceutical tablet of Figure 23 taken along sectional lines G-G;

Figure 26 is a perspective view of yet another embodiment multi-fractionable pharmaceutical tablet of the present invention;

Figure 27 is a longitudinal cross-sectional view of the pharmaceutical tablet of Figure 26 taken along sectional lines I-I;

Figure 28 is a top view of the pharmaceutical tablet of Figure 26;

Figure 29 is a perspective view of yet another embodiment multi-fractionable pharmaceutical tablet of the present invention;

Figure 30 is a transverse cross-sectional view of the pharmaceutical tablet of Figure 29 taken along sectional lines L-L;

Figure 31 is a top view of the pharmaceutical tablet of Figure 29;

Figure 32 is a perspective view of yet another embodiment multi-fractionable pharmaceutical tablet of the present invention;

Figure 33 is a top view of the pharmaceutical tablet of Figure 32;

Figure 34 is a bottom view of the pharmaceutical tablet of Figure 32;

Figure 35 is a perspective view of yet another embodiment multi-fractionable pharmaceutical tablet of the present invention;

Figure 36 is a top view of the pharmaceutical tablet of Figure 35;

Figure 37 is a bottom view of the pharmaceutical tablet of Figure 35;

Figure 38 is a perspective view of yet another embodiment pharmaceutical tablet of the present invention;

Figure 39 is a top view of the pharmaceutical tablet of Figure 38;

Figure 40 is a bottom view of the pharmaceutical tablet of Figure 38;

Figure 41 is a perspective view of yet another

embodiment pharmaceutical tablet of the present invention;

Figure 42 is a top view of the pharmaceutical tablet of Figure 41; and

- 5 Figure 43 is a bottom view of the pharmaceutical tablet of Figure 41.

Detailed Description of Preferred Embodiments

- Figures 1-4 illustrate pharmaceutical tablet 20 having bevel edge 22 disposed about the bottom peripheral edge thereof with bevel edge 24 disposed about the top peripheral edge. These bevel edges may vary as desired and typically range from about 25° to about 50° from the horizontal plane. One side of pharmaceutical tablet 20 is defined by vertical wall 26, intermediately disposed vertical score 28 and second vertical wall 30. Similarly, the opposite side of pharmaceutical tablet 20 is essentially the same configuration except defined by vertical wall 32, intermediately disposed vertical score 34, and second vertical wall 36. The end sections of tablet 20 are defined by vertical walls 44 and 46 respectively.

- The top and bottom surfaces of pharmaceutical tablet 20 also approximately duplicate each other with the top surface defined by horizontal planar surface 38, intermediate horizontal planar surface 40 and second horizontal planar surface 42. The horizontal planar surface 38 is joined to the intermediate horizontal planar surface 40 by transversely disposed top score 48 whereas intermediate horizontal planar surface 40 is joined to the second horizontal planar surface 42 by transversely disposed second top score 50. Similarly, the bottom surface of pharmaceutical tablet 20 is defined by bottom horizontal planar surface 52 which joins transversely disposed bottom score 54 and bottom intermediate horizontal planar surface 56. This latter surface joins together a second transversely disposed bottom score 58 and second horizontal planar surface 60.

- For consumption purposes, pharmaceutical tablet 20 may be administered as a unitary dosage. In the event a half dosage is desired, the tablet may be fractured conveniently along score markings 28-34, while one-third dosages may be administered by fracturing the tablet respectively along score markings 48-54 and 50-58. It will also be appreciated that a one-third dosage may be administered by fracturing the tablet along, for example, score markings 48-54, with the remaining two-third dosage unit being separately consumed.

- Figures 5-8 illustrate an embodiment pharmaceutical tablet 62 of the present invention having bevel edge 64, similar to that of tablet 20, disposed about the bottom peripheral edge, with bevel edge 66 correspondingly positioned about the top peripheral edge. One side of pharmaceutical tablet 62 is defined by vertical wall 68, intermediately disposed vertical score 70 and second vertical wall 71. Similarly, the opposite side of pharmaceutical tablet 62 is essentially the same configuration except defined by vertical wall 73, intermediately disposed vertical score 72, and second vertical wall 74.

- The essential distinction of the tablet structure 62 over the tablet structure 20 resides in the significant depth of the score markings 70-72. These score

markings may be impressed to depths beyond the bevel edge as opposed to the score markings 28-34 which essentially project to the horizontal planar surface of the top and bottom portions of tablet 20.

- 70 Score markings 70-72 may be at a V-groove angle of about 40° to 50°, and preferably about 45°, with each V-groove depth being about 1/4 to about 1/3 the width of the tablet.

- The top and bottom surfaces of pharmaceutical tablet 62 also approximately duplicate each other, with the top surface defined by horizontal planar surface 76, intermediate horizontal planar surface 78 and second horizontal planar surface 80. The horizontal planar surface 76 is joined to the intermediate horizontal planar surface 78 by transversely disposed top score 82, again similar to the corresponding score marking 48 of tablet 20, whereas intermediate horizontal planar surface 78 is joined to the second horizontal planar surface 80 by transversely disposed second top score 84. Similarly, the bottom surface of pharmaceutical tablet 62 is defined by bottom horizontal planar surface 90 which join transversely disposed bottom score 92 and bottom intermediate horizontal planar surface 94. This latter surface joins together a second transversely disposed bottom score 96 and second horizontal planar surface 98. The end walls of tablet 62 are defined by vertical walls 86 and 88 respectively.

- Again, for consumption purposes, pharmaceutical tablet 62 may be administered as a unitary dosage. In the event a half dosage is desired, the tablet may be fractured conveniently along score markings 70-72, while one-third dosages may be administered by fracturing the tablet respectively along score markings 82-92 and 84-96. It will also be appreciated that a one-third dosage may be administered by fracturing the tablet along, for example, score markings 82-92, with the remaining two-third dosage unit being separately consumed.

- Figures 9-13 illustrate an embodiment pharmaceutical tablet 100 of the present invention having bevel edge 102 disposed about only the top peripheral edge. One side of pharmaceutical tablet 100 is defined by arcuate vertical wall 104, intermediately disposed vertical score 106 and second arcuate vertical wall 108. Similarly, the opposite side of pharmaceutical tablet 100 is essentially the same configuration except defined by arcuate vertical wall 124, intermediately disposed vertical score 126, and second arcuate vertical wall 128. The end portions of tablet 100 appear as substantially vertical wall surfaces 120 and 122 respectively.

- The vertical score markings 106 and 126 of tablet 100 are configured similar to score markings 70 and 72 of tablet 62. Correspondingly, the size and angle dimensions are similar for practical purposes of construction.

- The top and bottom surfaces of pharmaceutical tablet 100 present a significant contrast in that the top surface is defined by horizontal planar surface 110, intermediate horizontal planar surface 112 and a second horizontal planar surface 114. The horizontal planar surface 110 is joined to the intermediate horizontal planar surface 112 by transversely dis-

posed top score 118, whereas intermediate horizontal planar surface 112 is joined to the second horizontal planar surface 114 by transversely disposed second top score 116.

5 Score markings 116 and 118 are deeply grooved indentations having a V-groove angle of about 55° to about 65°, with an angle of about 60° being preferred. The depth of these V-grooves may vary from about 1/4 to about 5/8 of the thickness of the tablet.

10 The bottom surface of pharmaceutical tablet 100 is defined by a slightly arcuate surface 130 which joins transversely disposed bottom score 132 and bottom intermediate surface 134. This latter surface joins together a second transversely disposed bottom

15 score 136 and second slightly arcuate surface 138.

The V-groove score markings 132 and 136 vary from an angle of about 55° to about 65° with about 60° being preferred. However, and significantly, score markings 132 and 136 only slightly indent into the bottom surface of tablet 100. Typically, this depth varies from about 1/8 to about 1/4 of the thickness of this tablet.

For consumption purposes, pharmaceutical tablet 100 may be also administered as a unitary dosage. In the event a half dosage is desired, the tablet may be fractured conveniently along score markings 106-126, while one-third dosages may be administered by fracturing the tablet respectively along score markings 118-132 and 116-136. It will also be appreciated that a one-third dosage may be administered by fracturing the tablet along, for example, score markings 118-132, with the remaining two-third dosage unit being separately consumed.

Figures 14-15 illustrate yet another embodiment pharmaceutical tablet 140 which approximates the configuration of tablet 62 except the correspondingly defined top and side score markings are shifted 90 degrees to the side and bottom surfaces respectively. The remaining bottom and opposite side score markings are also transposed that same extent.

Pharmaceutical tablet 140 includes bevel edge 142 disposed about the top peripheral edge thereof, also similar in configuration to the bevel edge 24 of tablet 20.

45 The top and bottom surfaces of pharmaceutical tablet 140 have correspondingly configured surfaces in that the top surface is defined by horizontal planar surface 144, and a second horizontal planar surface 148. The horizontal planar surface 144 is joined to the second horizontal planar surface by transversely disposed top score 146.

The front and rear surfaces of pharmaceutical tablet 140 also approximately duplicate each other with the front surface defined by vertical surface 154, intermediate vertical surface 160 and second vertical surface 164. The vertical surface 154 is joined to the intermediate vertical surface 160 by score marking 158, whereas intermediate vertical surface 160 is joined to the second vertical surface 164 by second score marking 162. Similarly, the opposite side surface of pharmaceutical tablet 140 is defined by vertical surface 166 which joins first score marking 168, and intermediate vertical surface 170. This latter surface joins together a second score marking 172 and second vertical surface 174.

The corner edges of tablet 140 may also be tapered as desired such as elements 156 illustrating a taper of approximately 45 degrees.

Score markings 158, 162, 168 and 172 are all correspondingly configured with V-grooves having an approximate V-angle of about 40 to about 50 degrees, with an angle of about 45 degrees being preferred, with each V-groove depth being about 1/4 to about 1/3 the thickness of the tablet.

75 Score markings 146 and 178 may be configured similarly to the related score markings 82 of the tablet 62.

The dosages which may be extracted using tablet 140 approximately correspond to that of tablet 62 except, however, accounting for the 90 degrees transposition of surfaces.

Figures 16-18 illustrate pharmaceutical tablet 186 having bevel edge 188 disposed about the upper peripheral edge thereof with bevel edge 205 disposed about the bottom peripheral edge. These bevel edges may vary as desired and typically range from about 25° to about 50° from the horizontal plane. One side of pharmaceutical tablet 186 is defined by vertical wall 200 whereas the opposite side is defined by vertical wall 204. In similar regard, the front surface of tablet 186 is defined by vertical wall 206 whereas the oppositely disposed rear portion is defined by vertical wall 208.

The top surface of pharmaceutical tablet 186 is uniquely distinct from the bottom surface thereof. The top surface is defined by horizontal planar surface 190, intermediate horizontal planar surface 192 and second horizontal planar surface 194. Planar surface 190 is joined to the intermediate horizontal planar surface 192 by means of score marking 196, whereas the intermediate planar surface 192 is joined to the second horizontal planar surface 194 by means of second score marking 198.

The bottom surface of pharmaceutical tablet 186 is defined by a first bottom planar surface 210, joined by a longitudinally disposed score marking 216 to a second bottom planar surface 214.

Score markings 196, 198 and 216 may have similar V-groove configurations and for constructions purposes, are similarly configured to score markings 48 and 50 of tablet 20.

For consumption purposes, pharmaceutical tablet 186 may be administered as a unitary dosage. In the event a half dosage is desired, the tablet may be fractured conveniently along score marking 216, while one-third dosages may be administered by fracturing the tablet respectively along score markings 196 and 198. It will also be appreciated that further sub-dosage units may be administered by fracturing the tablet along, for example, score markings 196, 198 as well as 216.

Figures 19-22 illustrate pharmaceutical tablet 230 having bevel edge 232 disposed about the bottom peripheral edge thereof with bevel edge 234 disposed about the peripheral edge of top surface 235. These bevel edges may vary as desired and typically range from about 25° to about 50° from the horizontal plane. The side walls of pharmaceutical tablet 230 define an approximate pentagon by wall surfaces 236. On the top surface 235 of tablet 230, there are

disposed score 238 and score 240 which originate at one vertical wall edge 242 defining an apex and terminate at oppositely disposed vertical wall edges 244 and 246 respectively, defining base wall 247 of the pentagonal configuration.

Bottom surface 248 of pharmaceutical tablet 230 includes score line 250 which approximately parallels base wall 247.

For consumption purposes, pharmaceutical tablet 230 may be administered as a unitary dosage. In the event a partial dosage is desired, the tablet may be fractured conveniently along score markings 238, while an approximate one-third dosage may be administered by fracturing the tablet respectively along score markings 238 and 240. It will also be appreciated that an approximate one-half dosage may be administered by fracturing the tablet along score markings 250. In the event all of the score lines are used; namely, score lines 238, 240, and 250, it is then possible to provide as many as six multi-fracture dosages.

Figures 23-25 illustrate an embodiment pharmaceutical tablet 252 of the present invention having bevel edge 254, similar to that of tablet 230, disposed about the bottom peripheral edge, with bevel edge 256 correspondingly positioned about the top peripheral edge.

Pharmaceutical tablet 252 is illustrated with hexagonal vertical walls, wall members 258 being approximately equal in length and joined by shorter, parallel walls 260, so as to provide equal trisectional units when fractured along score lines 262 and 264. It will be apparent that parallel walls 260 may be of equivalent length or even longer than wall members 258 if desired. It is preferred to have two of the vertical wall members, such as walls 260, disposed in parallel when comprising the embodiment tablet of Figures 23-25. This feature expedites more effective fracture of this tablet along the top surface 261 by means of score lines 262 and 264 which join the apex where parallel walls 260 unite with wall members 258.

Disposed along the bottom surface 266 of pharmaceutical tablet 252 is score line 268 which joins the two apex sections formed where the respective pairs of wall members 258 unite.

When it is desired to fracture tablet 252 into multi-dosages, fracture may be effected along score lines 262 and 264 which results in up to three multi-dosage portions, or separately along score line 268 which results in two multi-dosage portions. Should one desire, fracture of tablet 252 may be effected along the top and bottom score lines in which case up to six multi-dosage portions result.

Figures 26-28 illustrate an elliptical embodiment pharmaceutical tablet 270 of the present invention having vertical walls 272, top surface 274 with bevel edges 276, and bottom surface 278 with bevel edges 280. The bevel edges are similar in configuration to those of pharmaceutical tablet 230 of Figures 19-22.

On the top surface of pharmaceutical tablet 270 are two score lines 282 and 284, respectively with intermediately disposed vertical score lines 286 and 288. Score lines 286 and 288 are approximately oppositely positioned along vertical walls 272.

Fracture of the elliptical embodiment pharmaceutical tablet of Figures 26-28 may be effected along score lines 282 and 284 which provides three equal multi-dosage portions, or separately between score lines 286 and 288 which results in two equal multi-dosage portions.

Figures 29-31 illustrate another elliptical embodiment pharmaceutical tablet 290 of the present invention having vertical walls 292, top surface 294 with bevel edges 296, and bottom surface 298 with bevel edges 300. The bevel edges are similar in configuration to those of pharmaceutical tablet 230 of Figures 19-22.

On the top surface of pharmaceutical tablet 290 is one intermediate score line 302, with two disposed vertical pairs of score lines 304 and 306, and 308 and 310, respectively. One pair of score lines 304 and 306 are approximately oppositely positioned along vertical walls 292 to the second pair of score lines 308 and 310.

Fracture of the elliptical embodiment pharmaceutical tablet of Figures 29-31 may be effected along the two sets of score lines 304 and 306, and 308 and 310 which provides three equivalent multi-dosage portions, or separately along score line 302 which results in two equivalent multi-dosage portions.

Figures 32-34 illustrate yet another elliptical embodiment pharmaceutical tablet 312 of the present invention having vertical walls 314, top surface 316 with bevel edges 318, and bottom surface 320 with bevel edges 322. Again, the bevel edges are similar in configuration to those of pharmaceutical tablet 230 of Figures 19-22.

On the top surface 316 of pharmaceutical tablet 312 are two score lines 324 and 326, respectively, with intermediately disposed bottom score lines 328.

Fracture of the elliptical embodiment pharmaceutical tablet 312 of Figure 32-34 may be effected along score lines 324 and 326 which provides three equivalent multi-dosage portions, or separately along bottom score line 328 which results in two equivalent multi-dosage portions.

Figures 35-37 illustrate a circular embodiment pharmaceutical tablet 330 of the present invention having vertical walls 332, top surface 334 with bevel edges 336, and bottom surface 338 with bevel edges 340. Again, the bevel edges are similar in configuration to those of pharmaceutical tablet 230 of Figures 19-22.

On the top surface 334 of pharmaceutical tablet 330 are two score lines 342 and 344, respectively, with vertical wall score lines 346 and 348 positioned to effect a transverse breakage to that of score lines 342 and 344. Score lines 348 and 346 are approximately oppositely positioned along vertical wall surface 332.

Fracture of the circular embodiment pharmaceutical tablet 330 of Figures 35-37 may be effected along score lines 342 and 344 which provides three equivalent multi-dosage portions, or separately along score lines 346 and 348 which results in two equivalent multi-dosage portions. Again, should one desire, fracture of tablet 330 may be effected along each of score lines 342-344 346-348 in which case up to six multi-dosage portions result.

Figures 38-40 illustrate another circular embodiment pharmaceutical tablet 350 of the present invention having vertical walls 352, top surface 354 with bevel edges 356, and bottom surface 358 with bevel edges 360. Again, the bevel edges are similar in configuration to those of pharmaceutical tablet 230 of Figures 19-22.

On the top surface 354 of pharmaceutical tablet 350 are two score lines 362 and 364, respectively, with vertical wall score lines 366 and 368 positioned to effect a parallel intermediate to that of score lines 362 and 364. Score lines 366 and 368 are approximately oppositely positioned along vertical wall surface 352.

Fracture of the circular embodiment pharmaceutical tablet 350 of Figures 38-40 may be effected along score lines 362 and 364 which provides three equivalent multi-dosage portions, or separately along score lines 366 and 368 which results in two equivalent multi-dosage portions.

Figures 41-43 illustrate yet another circular embodiment pharmaceutical tablet 370 of the present invention having vertical walls 372, top surface 374 with bevel edges 376, and bottom surface 378 with bevel edges 380. Again, the bevel edges are similar in configuration to those of pharmaceutical tablet 230 of Figures 19-22.

On the top surface 374 of pharmaceutical tablet 370 is one score line 382 with two bottom score lines 384 and 386 positioned to effect a transverse breakage to that of score line 382.

Fracture of the circular embodiment pharmaceutical tablet 370 of Figure 41-43 may be effected along score line 382 which provides two equivalent multi-dosage portions, or separately along score lines 384 and 386 which results in three equivalent multi-dosage portions. Again, should one desire, fracture of tablet 370 may be effected along side line 382 as well as along score lines 384 and 386 in which case up to six multi-dosage portions result.

The score markings may be at a V-groove angle of about 40° to 65°, and preferably about 45° and 60°, with each V-groove depth being about 1/8 to about 1/3 into the respective depth of the tablet.

The present multi-fractionable tablet structure includes specially positioned score marking for accurate multi-sectional fracture of the tablet.

Tablets of the present invention may be composed of a variety of ingredients such as one or more active pharmaceutical ingredients, fillers, lubricants, carriers, flavoring ingredients or the like as desired. These materials are well known to skilled tablet formulators.

Although it has not been specifically disclosed herein, it will be appreciated that the present multi-fractionable tablet structure may be specially marked with a corporate logo or otherwise colored as desired to reflect particular dosage units being consumed. Also, the present tablet may be coated with suitable materials well known in the tablet formation art.

Having described the present invention with particular reference to the disclosed embodiments, it will be obvious to those skilled in this art, that various changes and modifications may be made therein

without departing from the spirit and scope of the invention which is disclosed and claimed herein.

CLAIMS

1. A tablet structure which comprises a unitary body having oppositely disposed first and second substantially horizontal surfaces joined respectively by a substantially vertical wall or walls, any one of said first horizontal surface, or said second horizontal surface, or said substantially vertical wall(s) containing at least two transverse scores and at least one other of said surfaces or wall(s) containing a respective single transverse score, provided that, in the case of a tablet having only a single substantially vertical wall, the latter may have two transverse scores, whereby the unitary body may be fractured along the at least two transverse scores to form three fragments, or fractured along the (respective) single transverse score(s), or two scores in the single substantially vertical wall case, to form two fragments.
2. The tablet structure of claim 1 wherein first and second surfaces include bevel edges, and wherein the scores have an indentation depth to a line defining the bevel edge.
3. The tablet structure of claim 2 wherein the bevel edges range from about 25 degrees to about 50 degrees from the horizontal plane.
4. The tablet structure of claim 3 wherein the bevel edge angle is about 30 degrees to about 45 degrees.
5. The tablet structure of any one of claims 1 to 4 wherein the scores are in the shape of V-grooves, and have a V-groove angle of about 40 degrees to about 50 degrees, and a V-groove depth of about 1/8 to about 1/3 the width of the tablet.
6. The tablet structure of any one of claims 1 to 5 wherein the first and second surfaces define the top and bottom surfaces respectively.
7. The tablet structure of any one of claims 1 to 6 wherein the substantially vertical walls define a unitary body of rectangular outline.
8. The tablet structure of claim 7 wherein said first substantially horizontal surface has two parallel scores defining three approximately equal dosage units disposed thereon and said second substantially horizontal surface has a single score defining two approximately equal dosage units disposed thereon whereby the unitary body may be fractured along the two scores or the single score into three or two units respectively for consumption.
9. The tablet structure of any one of claims 1 to 6 wherein the substantially vertical walls define a unitary body of pentagonal outline.
10. The tablet structure of claim 9 wherein said first substantially horizontal surface has two scores disposed transversely from one apex of the pentagon at a join of 2 vertical walls to respective opposite apexes separated by a whole vertical wall, to facilitate a fracture of the unitary body into three fragments, and said second substantially horizontal surface has a single score, to facilitate a transverse fracture of the unitary body into two fragments.
11. The tablet structure of any one of claims 1 to



Figures 38-40 illustrate another circular embodiment pharmaceutical tablet 350 of the present invention having vertical walls 352, top surface 354 with bevel edges 356, and bottom surface 358 with bevel edges 360. Again, the bevel edges are similar in configuration to those of pharmaceutical tablet 230 of Figures 19-22.

On the top surface 354 of pharmaceutical tablet 350 are two score lines 362 and 364, respectively, with vertical wall score lines 366 and 368 positioned to effect a parallel intermediate to that of score lines 362 and 364. Score lines 366 and 368 are approximately oppositely positioned along vertical wall surface 352.

Fracture of the circular embodiment pharmaceutical tablet 350 of Figures 38-40 may be effected along score lines 362 and 364 which provides three equivalent multi-dosage portions, or separately along score lines 366 and 368 which results in two equivalent multi-dosage portions.

Figures 41-43 illustrate yet another circular embodiment pharmaceutical tablet 370 of the present invention having vertical walls 372, top surface 374 with bevel edges 376, and bottom surface 378 with bevel edges 380. Again, the bevel edges are similar in configuration to those of pharmaceutical tablet 230 of Figures 19-22.

On the top surface 374 of pharmaceutical tablet 370 is one score line 382 with two bottom score lines 384 and 386 positioned to effect a transverse breakage to that of score line 382.

Fracture of the circular embodiment pharmaceutical tablet 370 of Figure 41-43 may be effected along score line 382 which provides two equivalent multi-dosage portions, or separately along score lines 384 and 386 which results in three equivalent multi-dosage portions. Again, should one desire, fracture of tablet 370 may be effected along side line 382 as well as long score lines 384 and 386 in which case up to six multi-dosage portions result.

The score markings may be at a V-groove angle of about 40° to 65°, and preferably about 45° and 60°, with each V-groove depth being about 1/8 to about 1/3 into the respective depth of the tablet.

The present multi-fractionable tablet structure includes specially positioned score marking for accurate multi-sectional fracture of the tablet.

Tablets of the present invention may be composed of a variety of ingredients such as one or more active pharmaceutical ingredients, fillers, lubricants, carriers, flavoring ingredients or the like as desired. These materials are well known to skilled tablet formulators.

Although it has not been specifically disclosed herein, it will be appreciated that the present multi-fractionable tablet structure may be specially marked with a corporate logo or otherwise colored as desired to reflect particular dosage units being consumed. Also, the present tablet may be coated with suitable materials well known in the tablet formation art.

Having described the present invention with particular reference to the disclosed embodiments, it will be obvious to those skilled in this art, that various changes and modifications may be made therein

without departing from the spirit and scope of the invention which is disclosed and claimed herein.

CLAIMS

1. A tablet structure which comprises a unitary body having oppositely disposed first and second substantially horizontal surfaces joined respectively by a substantially vertical wall or walls, any one of said first horizontal surface, or said second horizontal surface, or said substantially vertical wall(s) containing at least two transverse scores and at least one other of said surfaces or wall(s) containing a respective single transverse score, provided that, in the case of a tablet having only a single substantially vertical wall, the latter may have two transverse scores, whereby the unitary body may be fractured along the at least two transverse scores to form three fragments, or fractured along the (respective) single transverse score(s), or two scores in the single substantially vertical wall case, to form two fragments.

2. The tablet structure of claim 1 wherein first and second surfaces include bevel edges, and wherein the scores have an indentation depth to a line defining the bevel edge.

3. The tablet structure of claim 2 wherein the bevel edges range from about 25 degrees to about 50 degrees from the horizontal plane.

4. The tablet structure of claim 3 wherein the bevel edge angle is about 30 degrees to about 45 degrees.

5. The tablet structure of any one of claims 1 to 4 wherein the scores are in the shape of V-grooves, and have a V-groove angle of about 40 degrees to about 50 degrees, and a V-groove depth of about 1/8 to about 1/3 the width of the tablet.

6. The tablet structure of any one of claims 1 to 5 wherein the first and second surfaces define the top and bottom surfaces respectively.

7. The tablet structure of any one of claims 1 to 6 wherein the substantially vertical walls define a unitary body of rectangular outline.

8. The tablet structure of claim 7 wherein said first substantially horizontal surface has two parallel scores defining three approximately equal dosage units disposed thereon and said second substantially horizontal surface has a single score defining two approximately equal dosage units disposed thereon whereby the unitary body may be fractured along the two scores or the single score into three or two units respectively for consumption.

9. The tablet structure of any one of claims 1 to 6 wherein the substantially vertical walls define a unitary body of pentagonal outline.

10. The tablet structure of claim 9 wherein said first substantially horizontal surface has two scores disposed transversely from one apex of the pentagon at a join of 2 vertical walls to respective opposite apexes separated by a whole vertical wall, to facilitate a fracture of the unitary body into three fragments, and said second substantially horizontal surface has a single score, to facilitate a transverse fracture of the unitary body into two fragments.

11. The tablet structure of any one of claims 1 to



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6 wherein the substantially vertical walls define a unitary body of hexagonal outline.

12. The tablet structure of claim 11 wherein said first substantially horizontal surface has two parallel scores disposed therein transversely from oppositely disposed apexes originating at the substantially vertical walls, and a single score disposed on said second substantially horizontal surface perpendicularly to said two parallel score lines.

13. The tablet structure of any one of claims 1 to 6 wherein the substantially vertical walls define a unitary body of elliptical outline.

14. The tablet structure of claim 13 wherein said first substantially horizontal surface has one score disposed thereon, and said vertical walls have two sets of two oppositely positioned vertical scores externally of said horizontal surface score.

15. The tablet structure of claim 13 wherein said first substantially horizontal surface has two parallel scores disposed thereon, and said second substantially horizontal surface has one score intermediate said two parallel scores.

16. The tablet structure of any one of claims 1 to 6 wherein the substantially vertical wall defines a unitary body of circular outline.

17. The tablet structure of claim 16 wherein said first substantially horizontal surface has two parallel scores disposed thereon, and said vertical wall has two oppositely positioned vertical scores disposed to facilitate a fracture perpendicular to said two parallel scores.

18. The tablet structure of claim 16 wherein said first substantially horizontal surface has two parallel score lines disposed thereon, and said vertical wall has two oppositely positioned vertical score lines intermediate said two parallel score lines.

19. The tablet structure of claim 16 wherein said first substantially horizontal surface has one score line disposed thereon, and said second substantially horizontal surface has two parallel score lines disposed perpendicular to the score line on said first horizontal surface.

20. A pharmaceutical tablet substantially as hereinbefore described with reference to Figures 1 to 4, 5 to 8, 9 to 13, 14 and 15, 16 to 18, 19 to 22, 23 to 25, 26 to 28, 29 to 31, 32 to 34, 35 to 37, 38 to 40, or 41 to 43, of the accompanying Drawings.