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(54) **FILTER CONTAINING BUILT-IN CAPSULE, CIGARETTE PROVIDED WITH FILTER AND CIGARETTE SUBSTITUTE PROVIDED WITH FILTER**

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(57) **ABSTRACT**

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[Problems] The present invention provides a filter containing built-in capsule in which a tobacco flavor enhancing liquid that can enhance flavor aspects such as taste, aroma, and richness is encapsulated, along with a cigarette and cigarette substitute comprising this filter.

[Resolution means] The cigarette in which filter containing built-in capsule **1** according to the present invention is incorporated includes cut leaf **2**, rolling paper **3**, filter **4**, and tip paper **5**, with easily breakable capsule **6** incorporated in filter **4**, and tobacco flavor enhancing liquid **8** including natural cacao extract encapsulated in film **7**. When smoking, by pinching the filter part to crush capsule **6**, film **7** bursts, causing tobacco flavor enhancing liquid **8** to ooze into filter **4** and enabling enhancement of the taste, aroma, richness, etc. specific to tobacco.

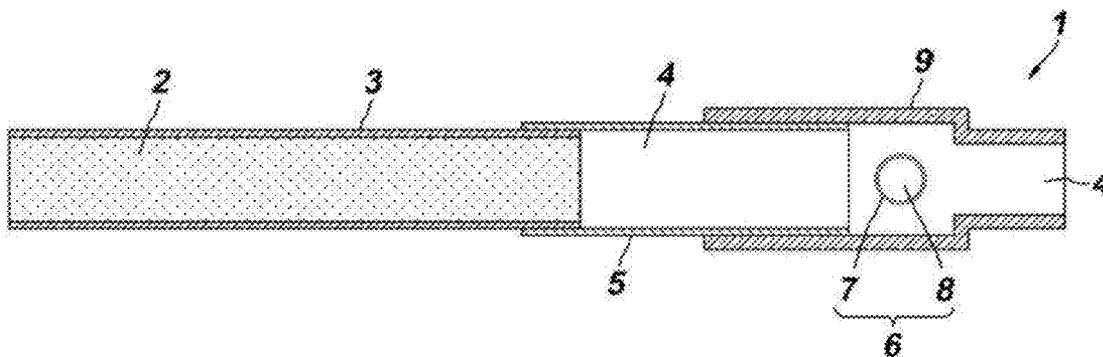


Fig. 1

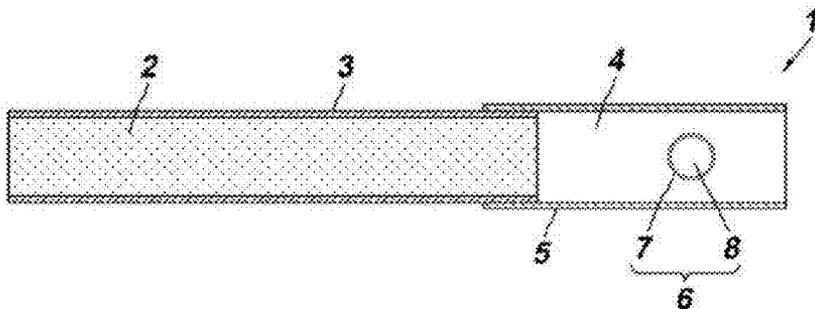


Fig. 2

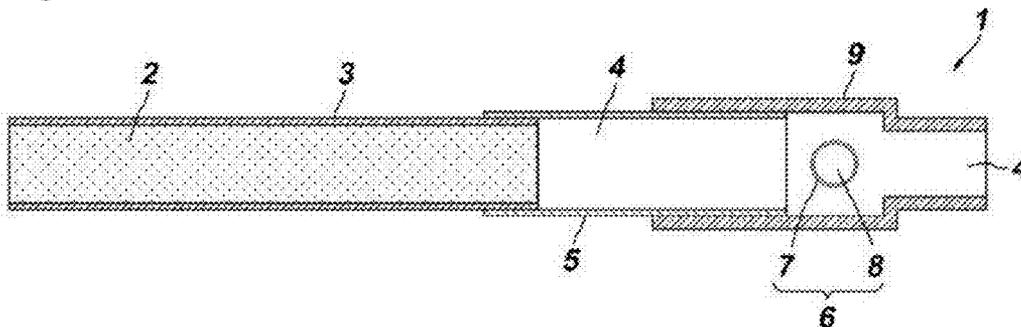


Fig. 3

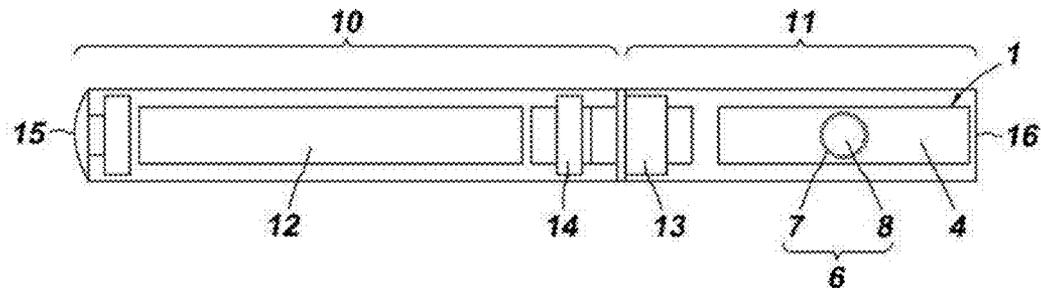
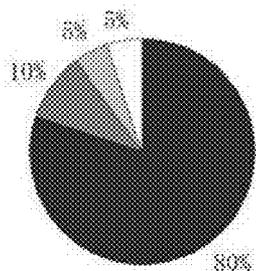
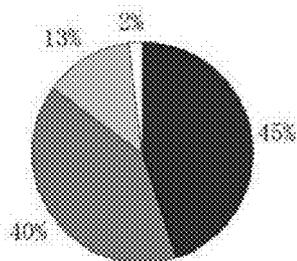


Fig. 4



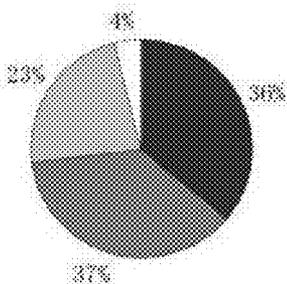
A

- Felt that it was a stronger cigarette than the target
- ▒ Felt that the taste changed but did not become stronger compared with the target
- ▓ Did not feel that it was a stronger cigarette than the target
- Others



B

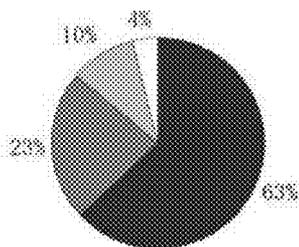
- Felt that it was a stronger cigarette than the target
- ▒ Felt that the taste changed but did not become stronger compared with the target
- ▓ Did not feel that it was a stronger cigarette than the target
- Others



C

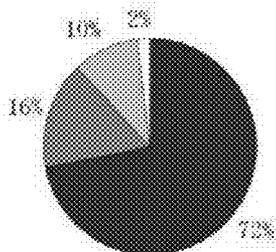
- Felt that it was a stronger cigarette than the target
- ▒ Felt that the taste changed but did not become stronger compared with the target
- ▓ Did not feel that it was a stronger cigarette than the target
- Others

Fig. 5



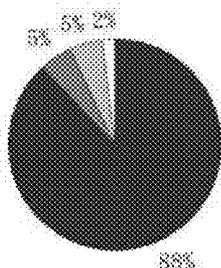
D

- Felt that it was a stronger cigarette than the target
- ▒ Felt that the taste changed but did not become stronger compared with the target
- ▓ Did not feel that it was a stronger cigarette than the target
- Others



E

- Felt that it was a stronger cigarette than the target
- ▒ Felt that the taste changed but did not become stronger compared with the target
- ▓ Did not feel that it was a stronger cigarette than the target
- Others

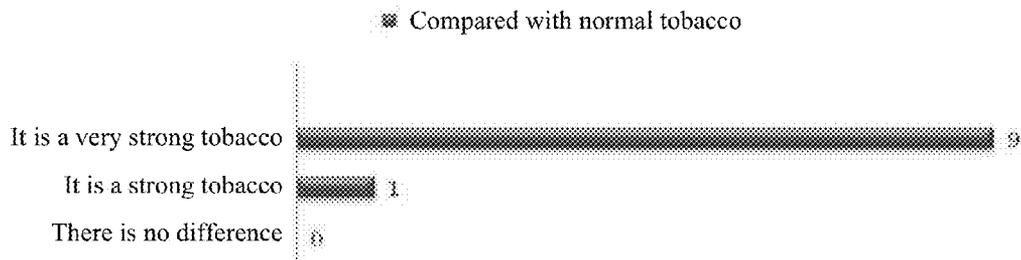


F

- Felt that it was a stronger cigarette than the target
- ▒ Felt that the taste changed but did not become stronger compared with the target
- ▓ Did not feel that it was a stronger cigarette than the target
- Others

Fig. 6

Compared with normal tobacco



How many mg of tar do you feel it contains?

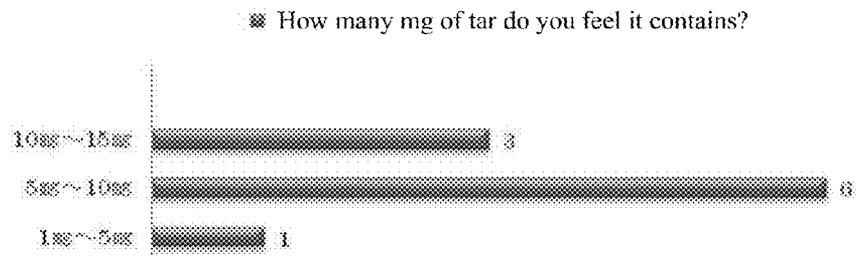
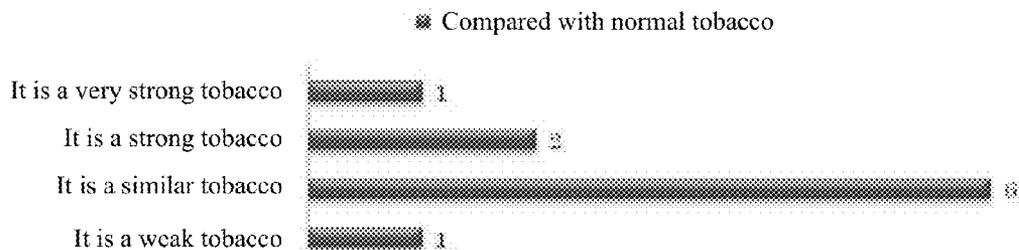
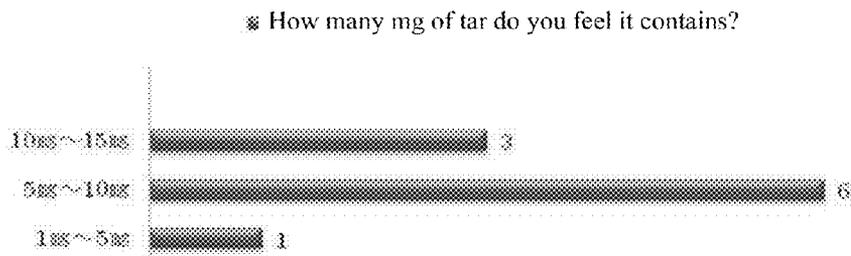


Fig. 7

Compared with normal tobacco



How many mg of tar do you feel it contains?



FILTER CONTAINING BUILT-IN CAPSULE, CIGARETTE PROVIDED WITH FILTER AND CIGARETTE SUBSTITUTE PROVIDED WITH FILTER

TECHNICAL FIELD

[0001] The present invention relates to a filter containing built-in capsule in which a tobacco flavor enhancing liquid that can enhance flavor aspects such as taste, aroma, and richness is encapsulated, along with a cigarette and cigarette substitute comprising this filter.

BACKGROUND OF THE INVENTION

[0002] Smokers conventionally smoke cigarettes for a variety of reasons (for example, relaxing, socializing, simple addiction, etc.). Under such circumstances, with antismoking campaigns having become widespread in recent years, numerous smokers who do not want to stop smoking instead continue to smoke low-tar and low-nicotine cigarettes.

[0003] However, in changing their daily cigarettes to low-tar and low-nicotine cigarettes, smokers feel that the latter cigarettes are actually weak in taste, light, and do not provide a sense of smoking, etc., causing them return to smoking high-tar and high-nicotine cigarettes.

[0004] On the other hand, Patent Document 1 described below discloses a smoking device with the object of providing an actual low-tar cigarette that provides the same sensation as if smoking a high-tar cigarette. This smoking device includes an additional sensory irritation component at the end of the mouthpiece of the cigarette, with a bittering agent used as this sensory irritation component.

[0005] However, according to this smoking device, as the sensory irritation component is directly added to the tip paper, this component is in continuous contact with the air. Therefore, it tends to vaporize, resulting in the problem of the taste and aroma likely being lost. In addition, when smokers hold a cigarette, it stimulates the senses directly via the mouth, making it impossible to distinguish between low-tar and high-tar depending on their current mood, etc. Therefore, it does not sufficiently satisfy the taste of smokers as described above.

PRIOR ART DOCUMENTS

Patent Document

[0006] Patent Document 1: Japanese Unexamined Patent Application Publication No. 2009-148233

BRIEF SUMMARY OF THE INVENTION

Problems to be Solved by the Invention

[0007] The present invention has been created in order to solve such problems, with the object thereof to provide a filter containing built-in capsule that provides, as required, the sensation of a high-tar and high-nicotine cigarette having flavor aspects such as taste, aroma, and richness even in low-tar and low-nicotine cigarettes, along with a cigarette and a cigarette substitute comprising this filter.

Means for Solving the Problems

[0008] As a means of achieving said object, the present invention provides a filter containing built-in capsule,

wherein an easily breakable capsule is incorporated in a filter and a tobacco flavor enhancing liquid is encapsulated in a film of this capsule, with the liquid including natural cacao extract but not nicotine and tar, and the cacao extract obtained by adding and immersing cacao beans in an organic solvent at a higher temperature and extracting the cacao beans. Here, the easily breakable capsule is a capsule of a strength such that the film bursts when pinched, exemplified by a seamless capsule. In addition, the natural cacao extract includes an alkaloid compound that not only expresses the intrinsic taste of tobacco but also provides flavor, body, and the true essence of tobacco. Moreover, the tobacco flavor enhancing liquid also includes a natural cacao extract along with other natural extracts or a combination of natural fragrance and synthetic fragrance. Typical examples thereof generally include: coffee, spices, herbs as natural extracts; absolute, resinoid, balsam, etc. as natural fragrances; and food fragrances as synthetic fragrances. Note that the film is preferably formed of a food additive.

[0009] In addition, as a means of achieving said object, the present invention provides a cigarette including said filter containing built-in capsule. Here, although this cigarette is preferably configured such that said filter containing built-in capsule is preliminarily incorporated in this filter part, it is not limited to this configuration and may be configured such that said filter containing built-in capsule is installed in the filter part of commercially available cigarettes. The present invention also provides a cigarette substitute by inserting said filter containing built-in capsule into the cartridge of an electronic cigarette, etc.

Effects of the Invention

[0010] According to the present invention, when smokers crush a capsule with their fingers, if necessary, the tobacco flavor enhancing liquid encapsulated in the capsule and including natural cacao extract oozes into the filter, thereby providing enhanced taste, aroma, richness, etc. specific to tobacco, which could not be supplemented by a casing source added to cut leaves alone. Consequently, it becomes unnecessary to select a high-tar and high-nicotine tobacco, effectively providing smokers with the same flavor even with a low-tar and low-nicotine tobacco. In addition, when the present invention is used in an electronic cigarette, etc., even such a tobacco not containing tar or nicotine will have the same taste as real tobacco. This effectively allows cigarette substitutes to exert this taste.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0011] FIG. 1 is a cross-sectional view illustrating one embodiment of a cigarette comprising a filter containing built-in capsule of the present invention.

[0012] FIG. 2 is a cross-sectional view illustrating another embodiment of a cigarette comprising the filter containing built-in capsule of the present invention.

[0013] FIG. 3 is a cross-sectional view illustrating one embodiment of an electronic cigarette comprising the filter containing built-in capsule of the present invention.

[0014] FIG. 4 is a graph indicating the results of test 1.

[0015] FIG. 5 is a graph indicating the results of test 2.

[0016] FIG. 6 is a graph indicating the results of test 3.

[0017] FIG. 7 is a graph indicating the results of test 4.

EMBODIMENT OF THE INVENTION

[0018] Hereinafter, embodiments for carrying out the present invention will be described with reference to the drawings.

[0019] In the cigarette illustrated in FIG. 1, filter containing built-in capsule 1 of the present invention is incorporated in a standard paper-rolled cigarette. This paper-rolled cigarette includes cut leaf 2, rolling paper 3, filter 4, and tip paper 5.

[0020] With respect to cut leaf 2, different kinds of leaf tobacco are cut into fine pieces, to which fragrance is added in order to create a taste specific to tobacco when lit. The fragrance to be added to cut leaf 2 is a casing source with the main role of providing the intrinsic taste and aroma of leaf tobacco, along with a top flavor with the role of completing the taste and aroma of each brand. Sugar, cocoa, licorice, etc. are used as the casing source, while menthol, whisky, rum, fruit, vanilla, etc. are used as the top flavor.

[0021] Rolling paper 3 is paper for rolling up cut leaf 2 into a tube and slowly burning when lit. The material is a paper made of hemp and pulp.

[0022] Filter 4 plays a role in filtrating smoke and reducing the tar and nicotine in order to mellow the flavor. Examples of filter 4 include: a plain filter made of cellulose acetate; and a charcoal filter combining cellulose acetate with activated carbon (charcoal).

[0023] In order to connect cut leaf 2 to filter 4, part of tip paper 5 is superimposed and adhered on rolling paper 3 while rolled up in a tube. The material of tip paper 5 is a pulp mainly made of wood. In addition, microscopic vents are opened in tip paper 5, acting to adjust the amount of air passing there-through in order to decrease the taste or reduce the tar and nicotine.

[0024] In filter containing built-in capsule 1 of the present invention, easily breakable capsule 6 is incorporated in filter 4. With respect to this capsule 6, film 7 bursts when pinched from outside tip paper 5, causing internal tobacco flavor enhancing liquid 8 to ooze into filter 4 and be absorbed therein.

[0025] In the present embodiment, a round seamless capsule is used as this capsule 6. The seamless capsule is produced by the falling-drop method, with the content liquid flowed from a double internal nozzle into the liquid, while a film liquid is flowed from an external nozzle into the liquid. Thereby, this 2-layer fluid is cut at predetermined intervals and added dropwise by interfacial tension, after which an external film liquid is gelated and formed into a capsule. Note that the size of capsule 6 is formed so as to have a diameter of approximately 0.5 to 7.0 mm. In addition, the number of capsules 6 incorporated in one filter 4 is not limited to one, but may be multiple.

[0026] The raw material of film 7 is preferably one that can safely touch the mouth. For example, various food additives and thickening agents can be used. Carrageenan and agar are suitable among various food additives and thickening agents as they tend to burst when formed into capsule 6 in a thickening agent. Carrageenan and agar are slightly soluble in heat and also preferable in terms of heat resistance.

[0027] Tobacco flavor enhancing liquid 8 that is encapsulated in film 7 is a liquid for enhancing the taste, aroma, richness, etc. specific to tobacco, with natural cacao extract being the main component. The reason for adopting natural cacao extract is that an alkaloid compound having the same structure as nicotine is often used as the casing source of tobacco. Exemplary alkaloid compounds include cacao with

theobromine, as well as coffee and tea with caffeine. These are important natural extracts that not only express the intrinsic taste of tobacco but also provide flavor, body, and the true essence of tobacco.

[0028] Tobacco flavor enhancing liquid 8 uses natural cacao extract as the base, with the extract extracted by various methods such as the immersion-extraction method, reflux-extraction method, solvent extraction method, steam distillation method, counter current extraction method, and carbon dioxide extraction method. As a raw material for obtaining tobacco flavor enhancing liquid 8, cacao beans may be used alone or optionally blended with coffee beans. Exemplary cacao beans include species such as forastero, criollo, and trinitario, which are cacaos of the plant Sterculiaceae (*Theobroma cacao* L.), that are subjected to roasting. Coffee bean is the generic name of the Rubiaceae *Coffea arabica* plant, with the main cultivated varieties including *arabica* and *robusta*. While the coffee beans used in the present invention are not particularly limited in terms of their species, growing region, brand, quality, processing method, harvest time, etc., their compatibility with the film liquid of capsule 6 is important.

[0029] Tobacco flavor enhancing liquid 8 includes an extract (natural cacao extract) extracted from cacao beans as a single raw material or a raw material obtained by blending cacao beans and coffee beans. One example of the extraction method of this natural cacao extract is a method of adding an organic solvent to cacao beans as a single raw material or a raw material obtained by blending cacao beans and coffee beans, immersing them at a higher temperature for extraction, extracting the extract, and removing insoluble matter to obtain a solution. Subsequently, an organic solvent of an amount 3 to 20-fold the mass of the single or blended raw material is added and appropriately extracted after stirring for 15 to 120 minutes at 20 to 80° C. While the organic solvent used for extraction is not particularly limited, examples thereof include: alcohols such as methanol, ethanol, propanol, and propylene glycol; esters such as ethyl acetate and methyl acetate; ketones such as acetone and ethyl methyl ketone; hydrocarbons such as hexane and heptane; and edible oils and fats. Ethanol and edible oils and fats are particularly preferable among these in terms of safety.

[0030] With regard to tobacco flavor enhancing liquid 8, natural cacao extract obtained by said method may be used on its own or in combination with other raw materials. That is, natural cacao extract may be appropriately used in combination with a natural extract other than natural cacao extract, or a natural fragrance and synthetic fragrance. Exemplary natural extracts include: beans such as coffee; spices; spice extracts such as from herbs; tea; nuts; and foreign wines/liqueurs. Exemplary natural and synthetic fragrances include acetoacetic ester, acetophenone, anisic aldehyde, α -amyl cinnamaldehyde, methyl anthranilate, ionone, isoegenol, isoamyl isovalerate, ethyl isovalerate, allyl isosulfocyanate, isothiocyanates, indole and its derivative, γ -undecalactone, esters, the mixture of 2-ethyl-3,5-dimethylpyrazine and 2-ethyl-3,6-dimethylpyrazine, ethyl vanillin, 2-ethyl pyrazine, 2-ethyl-3-methylpyrazine, 2-ethyl-5-methylpyrazine, ethers, eugenol, octanol, octanal, ethyl octanoate, isoamyl formate, geranyl formate, citronellyl formate, cinnamic acid, ethyl cinnamate, methyl cinnamate, ketones, geraniol, isoamyl acetate, ethyl acetate, geranyl acetate, cyclohexyl acetate, citronellyl acetate, cinnamyl acetate, terpinyl acetate, phenethyl acetate, butyl acetate, benzyl acetate, 1-menthyl acetate, linalyl acetate, methyl salicylate, allyl cyclohexyl-

propionate, citral, citronellal, citronellol, 1,8-cineole, fat acids, aliphatic higher alcohols, aliphatic higher aldehydes, aliphatic higher hydrocarbons, 2,3-dimethylpyrazine, 2,5-dimethylpyrazine, 2,6-dimethylpyrazine, cinnamyl alcohol, cinnamaldehyde, thioethers, thiols, decanal, decanol, ethyl decanoate, 5,6,7,8-tetrahydroquinoxaline, 2,3,5,6-tetramethylpyrazine, terpineol, limonene, pinene, myrcene, tapinoren, terpene hydrocarbons, 2,3,5-trimethylpyrazine, γ -nonalactone, vanillin, p-methylacetophenone, hydroxycitronellal, hydroxycitronellal dimethylacetal, piperonal, isoamyl phenylacetate, isobutyl phenylacetate, phenyl ethyl acetate, phenol ethers, phenols, furfural and derivatives thereof, propionic acid, isoamyl propionate, ethyl propanoate, benzyl propionate, hexanoic acid, allyl hexanoate, ethyl hexanoate, ethyl heptanoate, 1-perillaldehyde, benzyl alcohol, benzaldehyde, aromatic alcohols, aromatic aldehydes, d-borneol, maltol, N-methyl methyl anthranilate, 5-methylquinoxaline, 6-methylquinoline, methyl β -naphthyl ketone, 2-methylpyrazine, 2-methylbutanol, 3-methyl-2-butanol, 2-methylbutyraldehyde, d1-menthol, 1-menthol, butyric acid, isoamyl butyrate, ethyl butyrate, cyclohexyl butyrate, butyl butyrate, lactones, and linalool. Coffee, spices, herbs, esters, and pyrazines are particularly suitable in terms of flavor.

[0031] Here, the method of producing tobacco flavor enhancing liquid **8** will be described. First, the natural cacao extract obtained by said method is subjected to filter processing to separate the solid and liquid. Subsequently, the natural cacao extract in the liquid is removed and its quality is controlled. Once measured, natural extract and fragrance are measured and added. Subsequently, these are formulated and stirred, the specific gravity thereof is controlled, and the specific gravity, water content, and pH are controlled in order to form a capsule. Lastly, foreign matter is removed by filter processing, its quality is controlled, and measurement, subdivision, and filling are conducted to produce tobacco flavor enhancing liquid **8**. Note that, as is clear from said raw material, tobacco flavor enhancing liquid **8** does not include any nicotine and tar components.

[0032] Capsule **6** has the above configuration. When smokers crush capsule **6** with their fingers while smoking, film **7** bursts, causing tobacco flavor enhancing liquid **8** to ooze into filter **4** and be absorbed therein. Consequently, the mainstream smoke passing through filter **4** mixes with tobacco flavor enhancing liquid **8** to reach the mouth of the smoker as the bittering component, thereby providing enhanced flavor aspects such as taste, aroma, and richness specific to tobacco, which cannot be supplemented by the casing source added to cut leaf **2**.

[0033] As described above, according to the cigarette of the present embodiment, when tobacco flavor enhancing liquid **8** including natural cacao extract is encapsulated in capsule **6**, and capsule **6** is incorporated in filter **4**, fragrance can be imparted not only to the part of cut leaf **2** but also to tobacco flavor enhancing liquid **8** inside capsule **6**. In addition, even if cut leaf **2** is lit during smoking, the fragrance does not vaporize right away, thereby minimizing the influence of heat. This has the effect of yielding a fresher flavor as the top flavor of tobacco.

[0034] In addition, when tobacco flavor enhancing liquid **8** including fragrance is formed into a capsule, tobacco flavor enhancing liquid **8** is sealed in film **7** and protected so as not to contact the air until smoking. Therefore, more highly-volatile fragrances can be used than when directly imparting fragrance to cut leaf **2**, ensuring that the freshness of the

aroma is maintained until smoking. In addition, food fragrances are used as the fragrance included in tobacco flavor enhancing liquid **8**, with the raw material of film **7** formed from a food additive as in tobacco flavor enhancing liquid **8**. This ensures that capsule **6** is safe in the event that it touches the mouth.

[0035] The cigarette illustrated in FIG. **1** is configured such that filter containing built-in capsule **1** of the present invention originally containing capsule **6** is incorporated in filter **4** of the paper-rolled cigarette. However, instead of this configuration, filter containing built-in capsule **1** of the present invention may be later installed in a commercially available cigarette.

[0036] The cigarette illustrated in FIG. **2** is smoked such that filter containing built-in capsule **1** of the present invention is installed outside the filter part of the paper-rolled cigarette to smoke. In this filter containing built-in capsule **1**, filter **4** is inserted into case **9** made of a soft material, with easily breakable capsule **6** incorporated inside this filter **4**. Note that the raw materials of filter **4**, film **7** of capsule **6**, and tobacco flavor enhancing liquid **8** are the same as mentioned above. As described above, the same effect as that mentioned above can also be achieved by installing filter containing built-in capsule **1** containing capsule **6** into commercially available paper-rolled cigarettes to smoke.

[0037] As mentioned above, although FIGS. **1** and **2** illustrate an example of applying filter containing built-in capsule **1** of the present invention to real tobacco, filter containing built-in capsule **1** of the present invention is applicable to cigarette substitutes such as in electronic cigarettes.

[0038] In the example illustrated in FIG. **3**, filter containing built-in capsule **1** of the present invention is incorporated in a standard electronic cigarette. As illustrated in FIG. **3**, this electronic cigarette includes body **10** and cartridge **11**.

[0039] Body **10** comprises: battery **12** made of a lithium-ion battery; an atomizer **13** that evaporates liquid into a spray by heating a heating wire; electronic circuit **14** to sense the airflow in the body via an airflow sensor to drive battery **12**; and indicator **15** including a red LED that lights when powered up. In addition, a refill filter is inserted into cartridge **11**, and cartridge **11** is installed in body **10** such that it is detachable. In the present embodiment, filter containing built-in capsule **1** is inserted into this cartridge **11** and used.

[0040] Battery **12** is preliminarily charged for use by a charger in order to enable the use of this electronic cigarette. Moreover, filter containing built-in capsule **1** is pinched in order to crush capsule **6**, and this is inserted into cartridge **11**. At this time, tobacco flavor enhancing liquid **8** inside capsule **6** oozes into filter **4** and is absorbed therein.

[0041] Subsequently, this cartridge **11** is installed in body **10** and suction suction port **16** at the end of cartridge **12** with the mouth. Then, an airflow sensor inside body **10** responds and power is supplied from battery **12** driven by electronic circuit **14** to atomizer **13**. This power is used to heat a heating wire of atomizer **13** and evaporate tobacco flavor enhancing liquid **8** absorbed in filter **4** into a spray water vapor.

[0042] Moreover, vaporized water is suctioned via filter **4** from suction port **16** to the body and expelled via the mouth such that it looks like smoke. Consequently, the sensation of smoking real tobacco can be enjoyed. In addition, when battery **12** is driven and indicator **15** at the tip of the body lights red, it appears to be on fire, allowing a sensation similar to smoking real tobacco to be achieved.

[0043] As described above, in the present embodiment, when filter containing built-in capsule **1** is inserted into cartridge **12** of an electronic cigarette and used, it suctions water vapor with tobacco flavor enhancing liquid **8** evaporated therein. Further, flavor aspects such as taste, aroma, and richness having the same flavor as real tobacco can be tasted. Moreover, tobacco flavor enhancing liquid **8** does not include tar and nicotine components, providing a cigarette substitute that is harmless to the body.

[0044] Lastly, the effects of the present invention will be described based on tests conducted by the inventors.

[0045] <Test 1>

[0046] Objective: a test for determining the base raw material of the tobacco flavor enhancing liquid

[0047] Method: The three kinds raw materials that were most effective in terms of testing and research results among many raw materials were selected, among which a test for determining the base raw material was conducted. The three kinds of raw materials were cacao beans, coffee beans, and tea leaves, each of which contained caffeine. These raw materials were immersed at a higher temperature and extracted under similar conditions in order to prepare solutions A, B, and C, which were formed into a seamless capsule by the falling-drop method, after which each capsule was incorporated in the tobacco filter (tar: 1 mg, nicotine: 0.1 mg) produced by Company X. Moreover, the subjects were asked to taste the flavor of cigarettes lit after crushing the capsule, in addition to tasting the flavor of cigarettes (tar: 1 mg, nicotine: 0.1 mg) produced by Company X not incorporating the capsule. FIG. 4 summarizes the impressions of the subjects who compared both flavors. Note that the subjects were 100 general smokers.

[0048] Results: FIG. 4 indicates that while each of A, B, and C enhanced the flavor of the tobacco, A was the most appropriate with regard to the object of Test 1. In A, cacao beans were the base raw material.

[0049] <Test 2>

[0050] Objective: a test for determining the blending ratio of natural cacao extract

[0051] Method: Based on the results of Test 1, cacao beans were selected as the base raw material, and three kinds of solutions D, E, and F with different blending ratios of natural cacao extract were prepared. The preparation method was the same as that in Test 1, with the following tables indicating the compositions of the respective solutions.

D	Blending ratio
*Fragrance	10
Natural cacao extract	25
MCT (edible oil)	65
Total	100

E	Blending ratio
*Fragrance	10
Natural cacao extract	50
MCT (edible oil)	10
Total	100

F	Blending ratio
*Fragrance	10
Natural cacao extract	75
MCT (edible oil)	15
Total	100

*Fragrance (common to D, E, and F)	Blending ratio
Synthetic fragrance	0
Natural fragrance	1
Spice extract	1
Total	10

[0052] Three kinds of solutions D, E, and F were formed into a seamless capsule by the falling-drop method, with each capsule incorporated in the tobacco filter (tar: 1 mg, nicotine: 0.1 mg) produced by Company X. Moreover, the subjects were asked to taste the flavor of cigarettes lit after crushing the capsule, in addition to tasting the flavor of cigarettes (tar: 1 mg, nicotine: 0.1 mg) produced by Company X not incorporating the capsule. FIG. 5 summarizes the impressions of the subjects who compared both flavors. Note that the subjects were 100 general smokers.

[0053] Results: FIG. 5 indicates that while each of D, E, and F exerted the effect of enhancing the flavor of tobacco, F was the most appropriate with regard to the object of Test 2. In F, the blending ratio of the natural cacao extract was 75%.

[0054] <Test 3>

[0055] Objective: a test to get smokers of cigarettes produced by Company X to compare the taste

[0056] Method: Based on the results of Test 2, solution F was formed into a seamless capsule by the falling-drop method, and each capsule was incorporated in the tobacco filter (tar: 1 mg, nicotine: 0.1 mg) produced by Company X. Moreover, the subjects were asked to taste the flavor of cigarettes lit after crushing the capsule, in addition to tasting the flavor of cigarettes (tar: 1 mg, nicotine: 0.1 mg) produced by Company X. FIG. 6 summarizes the impressions of the subjects who compared both flavors. Note that the subjects were 10 smokers different from the smokers of tests 1, 2. The 10 smokers usually smoke cigarettes (tar: 1 mg, nicotine: 0.1 mg) produced by Company X.

[0057] Results: FIG. 6 indicates the results. In addition, other impressions of the subjects were as follows.

[0058] Subject 1: It was rich and tasted good.

[0059] Subject 2: It was flavorful.

[0060] Subject 3: It was rich and tasted good.
 [0061] Subject 4: It was a little strong, but I can smoke this cigarette.
 [0062] Subject 5: It was strong, but the aroma of the smoke was good.
 [0063] Subject 6: I felt the sensation of smoking tobacco for the first time in many years.
 [0064] Subject 7: The tar was strong, but it tasted good.
 [0065] Subject 8: The aftertaste was not that of a low-tar tobacco.
 [0066] Subject 9: It was strong, so I was not able to finish smoking it.
 [0067] Subject 10: The tar was strong.
 [0068] The above results clearly proved that solution F could exert the effect of enhancing the flavor of the tobacco.
 [0069] <Test 4>
 [0070] Objective: a test to get smokers of cigarettes other than cigarettes produced by Company X to compare the taste
 [0071] Method: Based on the results of test 2, solution F was formed into a seamless capsule by the falling-drop method, and each capsule was incorporated in the tobacco filter (tar: 1 mg, nicotine: 0.1 mg) produced by Company X. Moreover, the subjects were asked to taste the flavor of cigarettes lit after crushing the capsule, in addition to tasting the flavor of cigarettes (tar: 1 mg, nicotine: 0.1 mg) produced by Company X not incorporating the capsule. FIG. 7 summarizes the impressions of the subjects who compared both flavors. Note that subjects were 10 smokers different from the smokers of tests 1, 2, 3. The 10 smokers usually do not smoke cigarettes (tar: 1 mg, nicotine: 0.1 mg) produced by Company X but smoke cigarettes of other makers.
 [0072] Results: FIG. 7 indicates the results. In addition, other impressions of the subjects were as follows.
 [0073] Subject 11: It was a tasty cigarette that I could smoke normally. . . . smoker of 8 mg tar per day
 [0074] Subject 12: I could smoke it normally. . . . smoker of 6 mg tar per day
 [0075] Subject 13: It was strong and worth smoking. . . . smoker of 6 mg tar per day
 [0076] Subject 14: I found it to be a strong cigarette because I usually smoke menthol. . . . smoker of 8 mg tar per day
 [0077] Subject 15: I felt that it was strong in my throat. . . . smoker of 1 mg tar per day
 [0078] Subject 16: It tasted like a mild cigarette. . . . smoker of 10 mg tar per day
 [0079] Subject 17: The aroma was good but the tar was a little lacking. . . . smoker of 12 mg tar per day
 [0080] Subject 18: As for the smoking flavor, the flavor was good and there was little aftertaste. . . . smoker of 6 mg tar per day

[0081] Subject 19: I like a stronger cigarette. . . . smoker of 9 mg tar per day
 [0082] Subject 20: The aftertaste in the mouth was cleaner than other cigarettes. . . . smoker of 10 mg tar per day
 [0083] The above results clearly proved that in cigarettes containing 1 mg of tar along with 0.1 mg of nicotine, the use of solution F enabled the effective enhancement of the flavor of cigarettes.

EXPLANATION OF THE SYMBOLS

[0084] 1 . . . filter containing built-in capsule
 [0085] 2 . . . cut leaf
 [0086] 3 . . . rolling paper
 [0087] 4 . . . filter
 [0088] 5 . . . tip paper
 [0089] 6 . . . capsule
 [0090] 7 . . . film
 [0091] 8 . . . tobacco flavor enhancing liquid
 [0092] 9 . . . case
 [0093] 10 . . . body
 [0094] 11 . . . cartridge
 [0095] 12 . . . battery
 [0096] 13 . . . atomizer
 [0097] 14 . . . electronic circuit
 [0098] 15 . . . indicator
 [0099] 16 . . . suction port

1. A filter containing built-in capsule, wherein an easily breakable capsule is incorporated in a filter, and a tobacco flavor enhancing liquid is encapsulated in a film of this capsule, with the liquid including natural cacao extract but not nicotine and tar, the cacao extract obtained by adding and immersing cacao beans in an organic solvent at a higher temperature and extracting the cacao beans.
 2. The filter containing built-in capsule according to claim 1, wherein said natural cacao extract includes an alkaloid compound.
 3. The filter containing built-in capsule according to claim 1, wherein said tobacco flavor enhancing liquid includes a natural extract other than natural cacao extract, or natural fragrance and synthetic fragrance.
 4. The filter containing built-in capsule according to claim 1, wherein said film is formed of a food additive.
 5. The filter containing built-in capsule according to claim 1, wherein said capsule is a seamless capsule.
 6. A cigarette comprising the filter containing built-in capsule according to claim 1.
 7. A cigarette substitute comprising the filter containing built-in capsule according to claim 1.

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