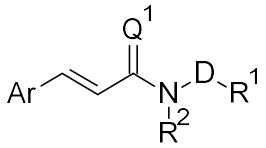
Claims:

[Claim 1]. A Composition for treating glioblastoma characterized by transient receptor potential vanilloid 2 channel (TRPV2) expression comprising;

a piperlongumine compound encapsulated in a hydrogel, wherein the composition is to be administered to a patient in need thereof as a post-surgical implant, and wherein the piperlongumine compound is a reversible antagonist of TRPV2 and has the formula 1:



where Q^1 is O or S,

-Ar is an optionally substituted phenyl group,

-D- is selected from -C(O)-, -C(S)-, -CH(OH)- and -CH(SH)-, and

$-R^1$ and $-R^2$, together with -N-D- to which they are attached, form an optionally substituted heterocyclic ring, or $-R^1$ and $-R^2$ are each independently selected from hydrogen and optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclyl and aryl,

and salts or solvates thereof.

[Claim 2]. The composition according to claim 1, wherein Q^1 is O.

[Claim 3]. The composition according to claim 1 or claim 2, wherein -D- is -C(O)- or -C(S)-, such as -C(O)-.

[Claim 4]. The composition according to any one of claims 1 to 3, wherein $-R^1$ and $-R^2$, together with -N-D- to which they are attached, form an optionally substituted heterocyclic ring.

[Claim 5]. The composition according to claim 4, wherein the heterocyclic ring is partially unsaturated.

[Claim 6]. The composition according to claim 5, wherein -D- is -C(O)- or -C(S)-, and the unsaturation is conjugated with the -C(O)- or -C(S)-.

[Claim 7]. The composition according to any one of claims 4 to 6, wherein the heterocyclic ring is single ring, such as a 4- to 9-membered ring, such as a 4- to 6-membered ring, such as 5- or 6-membered ring, such as a 6-membered ring.

[Claim 8]. The composition according to any one of claims 4 to 7, wherein $-R^1$ and $-R^2$, together with -N-D- to which they are attached, form an α,β-unsaturated δ-lactam, such as wherein $-R^1$ and $-R^2$, together with -N-D- to which they are attached is 5,6-dihydropyridin-2-one-1-yl.

[Claim 9]. A composition according to any one of claims 1 to 8, wherein the piperlongumine compound is piperlongumine.

[Claim 10]. A composition according to any one of claims 1 to 9 wherein the patient is previously identified as having or at risk of a glioblastoma characterized by TRPV2 expression.

[Claim 11]. A composition according to any one of claims 1 to 10 wherein the glioblastoma is primary or recurrent.

[Claim 12]. A composition according to any one of claims 1 to 11 wherein the piperlongumine compound is to be administered in combination with a second therapeutic agent.

[Claim 13]. A composition according to claim 12 wherein the second therapeutic agent is an anti-cancer compound.

[Claim 14]. A composition according to claim 13 wherein the anti-cancer compound is selected from an anthracycline, cytarabine, vincristine, L-asparaginase, cyclophosphamide, fibromun, dacarbazine, methotrexate and 6-mercaptopurine, chlorambucil, an alkylating agent, cyclophosphamide, corticosteroids, imatinib, cladribine, pentostatin, rituximab, chlorambucil, a taxane, and doxorubicin.

[Claim 15]. A composition according to any one of claims 1 to 14 wherein the piperlongumine compound is to be administered in combination with irradiation.

[Claim 16]. A composition according to any one of claims 1 to 15 wherein the hydrogel is cyclodextrin.

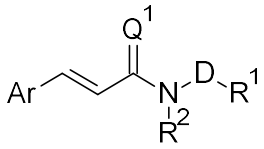
[Claim 17]. Use of the piperlongumine compound in the manufacture of the composition according to any one of claims 1 to 16.

[Claim 18]. A method of selecting a cancer patient for treatment with a piperlongumine compound comprising

determining the presence of TRPV2 expression in the glioblastoma cells obtained from a cancer patient,

wherein a glioblastoma patient with cancer cells that express TRPV2 is suitable for treatment with the piperlongumine compound,

wherein the piperlongumine compound is a reversible antagonist of TRPV2 and has the formula 1:



where Q^1 is O or S,

-Ar is an optionally substituted aryl group,

-D- is selected from -C(O)-, -C(S)-, -CH(OH)- and -CH(SH)-, and

$-R^1$ and $-R^2$, together with -N-D- to which they are attached, form an optionally substituted heterocyclic ring, or $-R^1$ and $-R^2$ are each independently selected from hydrogen and optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclyl and aryl,

or salts or solvates thereof.